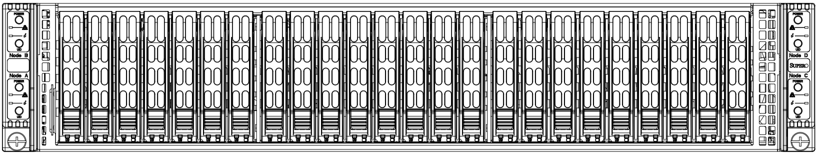
SUPERO®

SUPERSERVER
2028TP-HTR
2028TP-HTTR
2028TP-HTFR


Node B
Node A
Node D
Node C

USER'S MANUAL

Revision 1.0

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Manual Revision 1.0
Release Date: September 04, 2014

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 2028TP-HTR/HTTR/HTFR. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 2028TP-HTR/HTTR/HTFR is a high-end server based on the SC217HQ+-R2K02B 2U rackmount chassis and the dual processor X10DRT-P/PT/PIBF serverboard. Both models have an IPMI LAN port and four serverboard nodes with three hot-swap Hard Disk Drives (HDD) each per node.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the X10DRT-P/PT/PIBF serverboard and the SC217HQ+-R2K02B chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 2028TP-HTR/HTTR/HTFR into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: Standardized Safety Warnings

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 2028TP-HTR/HTTR/HTFR.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X10DRT-P/PT/PIBF serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC217HQ+-R2K02B server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes

Appendix B: System Specifications

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Chapter 1

Introduction

1-1 Overview

The SuperServer 2028TP-HTR/HTTR/HTFR is a high-end server comprised of two main subsystems: the SC217HQ+-R2K02B 2U server chassis and the X10DRT-P/PT/PIBF dual processor serverboard in four hot-swap nodes. Please refer to our web site for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the SuperServer 2028TP-HTR/HTTR/HTFR server, as listed below:

- Heat Sinks
  Four 1U passive CPU heat sinks for rear CPU (SNK-P0047PSM)
  Four 1U passive CPU heat sinks w/narrow ILM (SNK-P0057PS)
- Four mylar air shrouds (MCP-310-21702-0B)
- Four 80x80x38mm cooling fans (FAN-0136L4)
- SATA/SAS Backplane
  Four HD backplanes (BPN-ADP-6SATA3P-O-P)
  One SAS backplane HDD (BPN-SAS3-217HQ)
  Twenty-four hot-swap 2.5" HDD trays (MCP-220-00047-0B)
- Four Riser cards (RSC-R1UTP-E16R-O-P)
- One Rackmount rail kit (MCP-290-00053-0N)

Note: For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: http://www.supermicro.com/support/manuals/
- Product drivers and utilities: ftp://ftp.supermicro.com
- Product safety info: http://super-dev/about/policies/safety_information.cfm

1-2 Serverboard Features

At the heart of the SuperServer 2028TP-HTR/HTTR/HTFR lies the X10DRT-P/PT/PIBF, a dual processor serverboard based on the Intel® PCH C612 chipset and designed to provide maximum performance. Four of these serverboards can be mounted in the SC217HQ+-R2K02B chassis.

The sections below cover the main features of the X10DRT-P/PT/PIBF serverboard (see Figure 1-1 for a block diagram of the chipset).

Processors

The X10DRT-P/PT/PIBF supports single or dual Intel® Xeon® E5-2600 v3 series processors (Socket R LGA 2011). Please refer to the serverboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X10DRT-P/PT/PIBF has sixteen DIMM slots supporting up to 1024 GB of LRDIMM (Load Reduced DIMM) or 512 GB of RDIMM (Registered DIMM) DDR4-2133/1866/1600 MHz registered ECC memory. See Chapter 5 for details.

Note: Check the Supermicro website (www.supermicro.com) for the latest memory support information.

Serial ATA

A Serial ATA controller is integrated into the PCH C612 to provide up to a six-port 6 Gb/s SATA subsystem, which is RAID 0, 1, 5 and 10 supported. The SATA drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the SATA drives.

PCI Expansion Slots

The SuperServer 2028TP-HTR/HTTR/HTFR has for each node one (1) PCI Express 3.0 x16 slot (Slot 1) available for use with a riser card.

Onboard Controllers/Ports

An Intel i350 Gigabit (10/100/1000 Mb/s) Ethernet dual-channel controller is included on the X10DRT-P and X10DRT-PIBF. The X10DRT-PT has an Intel X540 10 Gigabit Ethernet dual-channel controller. A Connect-X3 port for InfiniBand (on), which supports a single QSFP connector is provided on the the X10DRT-PIBF only. The

I/O ports include a VGA (monitor) port, two USB 3.0 ports (additional one internal USB headers are included on the serverboard), an IPMI dedicated LAN port and two Ethernet ports.

Note: For IPMI Configuration Instructions, please refer to the Embedded BMC Configuration User's Guide available at http://www.supermicro.com/support/manuals/.

Graphics Controller

The X10DRT-P/PT/PIBF features an integrated ASpeed 2400 BMC with an integrated VGA/2D graphics controller.

InfiniBand

The 2028TP-HTFR server include a FDR (fourteen data rate) speed InfiniBand QSFP connector. InfiniBand is a scalable serial communications link intended for connecting processors with high-speed peripherals.

Other Features

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection, node manager software and BIOS rescue.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC217HQ+ server chassis.

System Power

Each SC217HQ+ chassis model includes a high-efficiency 80-plus Platinum certified power supply, rated at 2000 Watts plus one redundant backup power supply. In the unlikely event your power supply fails, replacement is simple and can be accomplished without tools.

SATA Subsystem

The SC217HQ+ supports up to 24 2.5" hot-swap SATA drives in trays (six for each node). These drives are hot-swappable units and are connected to a backplane that provides power and control.

Front Control Panel

SC217HQ+-R2K02B chassis includes four front panels on the handles of the chassis which control each of the systems. Each control panel on the SuperServer 2028TP-HTR/HTTR/HTFR provides you with system monitoring and control for one server node. LEDs indicate system power, HDD activity, network activity, system overheat and power supply failure. A main power button and a system reset button are also included.

Cooling System

The SC217HQ+ chassis accepts four system fans, which are powered from the backplane.

Air Shrouds

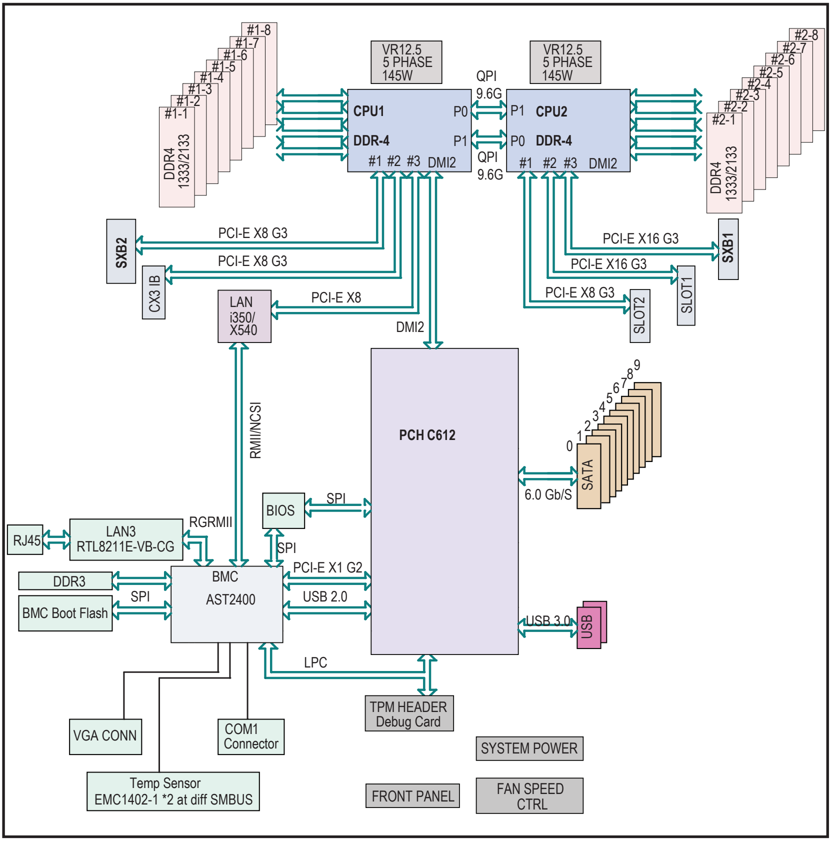
The SC217HQ+ chassis includes four mylar air shrouds that direct the airflow where cooling is needed on each serverboard. Always use the air shroud included with your chassis on each serverboard.

Mounting Rails

The SC217HQ+ includes a set of quick-release rails, and can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in this manual.

Figure 1-1. Intel PCH C612 Chipset: System Block Diagram

Note: This is a general block diagram and may not exactly represent the features on your serverboard. See the previous pages for the actual specifications of your serverboard. This block diagram is intended for your reference only.


#1-8
#1-7
#1-6
#1-5
#1-4
#1-3
#1-2
#1-1
DDR4
1333/2133
VR12.5
5 PHASE
145W
VR12.5
5 PHASE
145W
QPI
9.6G
CPU1
P0
DDR-4
P1
#1 #2 #3 DMI2
QPI
9.6G
P1
CPU2
P0
DDR-4
#1 #2 #3 DMI2
#2-8
#2-7
#2-6
#2-5
#2-4
#2-3
#2-2
#2-1
DDR4
1333/2133
SXB2
PCI-E X8 G3
PCI-E X8 G3
CX3 IB
LAN
i350/
X540
PCI-E X8
DMI2
PCI-E X16 G3
SXB1
PCI-E X16 G3
SLOT1
PCI-E X8 G3
SLOT2
RMII/NCSI
PCH C612
0 1 2 3 4 5 6 7 8 9
SATA
6.0 Gb/S
BIOS
SPI
SPI
RJ45
LAN3
RTL8211E-VB-CG
RGRMII
DDR3
SPI
BMC Boot Flash
BMC
AST2400
PCI-E X1 G2
USB 2.0
USB 3.0
USB
LPC
TPM HEADER
Debug Card
VGA CONN
COM1
Connector
SYSTEM POWER
Temp Sensor
EMC1402-1 *2 at diff SMBUS
FRONT PANEL
FAN SPEED
CTRL

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1-6 2U Twin^2: System Notes

As a 2U Twin^2 configuration, the SuperServer 2028TP-HTR/HTTR/HTFR is a unique server system. With four system boards incorporated into a single chassis acting as four separate nodes, there are several points you should keep in mind.

Nodes

Each of the four serverboards act as a separate node in the system. As independent nodes, each may be powered off and on without affecting the others. In addition, each node is a hot-swappable unit that may be removed from the rear of the chassis. The nodes are connected to the server backplane by means of an adapter card.

Note: A guide pin is located between the upper and lower nodes on the inner chassis wall. This guide pin also acts as a “stop” when a node is fully installed. If too much force is used when inserting a node this pin may break off. Take care to slowly slide a node in until you hear the “click” of the locking tab seating itself.

System Power

Dual 2000 Watt power supplies are used to provide the power for all four serverboards. Each serverboard however, can be shut down independently of the other with the power button on its own control panel.

SATA Backplane/Drives

As a system, the SuperServer 2028TP-HTR/HTTR/HTFR supports the use of 24 SATA drives. A single SATA backplane works to apply system-based control for power and fan speed functions, yet at the same time logically connects a set of six SATA drives to each serverboard. Consequently, RAID setup is limited to a six-drive scheme (RAID cannot be spread across all 24 drives). See the Drive Bay Installation/Removal section in Chapter 6 for the logical hard drive and node configuration.

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 2028TP-HTR/HTTR/HTFR up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the 2028TP-HTR/HTTR/HTFR server was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the 2028TP-HTR/HTTR/HTFR server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 2028TP-HTR/HTTR/HTFR was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).
- This product is not suitable for use with visual display work place devices acccording to §2 of the the German Ordinance for Work with Visual Display Units.

2-4 Warnings and Precautions

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow any hot plug drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

Warning! To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

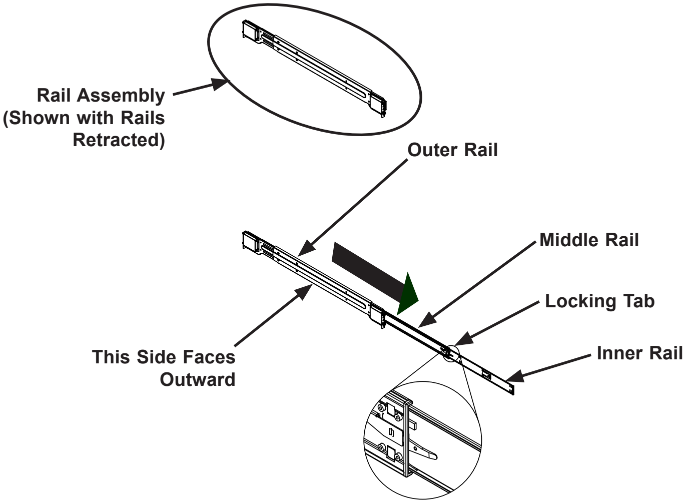
2-5 Installing the System into a Rack

This section provides information on installing the 2028TP-HTR/HTTR/HTFR into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using. **Note:** This rail will fit a rack between 26.5" and 36.4" deep.

Identifying the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of three sections: An inner chassis rail which secures directly to the chassis, an outer rail that secures to the rack, and a middle rail which extends from the outer rail (see Figure 2-1). These assemblies are specifically designed for the left and right side of the chassis.

Figure 2-1. Identifying the Outer Rail, Middle Rail and Inner Rails (Left Rail Assembly Shown)



Warning: do not pick up the server with the front handles. They are designed to pull the system from a rack only.

Locking Tabs

Each inner rail has a locking tab. This tab locks the chassis into place when installed and pushed fully into the rack. These tabs also lock the chassis in place when fully extended from the rack. This prevents the server from coming completely out of the rack when when the chassis is pulled out for servicing.

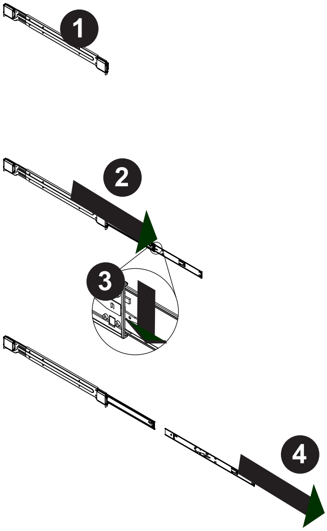
Releasing the Inner Rail

Use the procedure below to release the inner rails from the outer rails.

Releasing Inner Rail from the Outer Rails (Figure 2-2)

1. Identify the left and right outer rail assemblies as described in section 2-5.
2. Pull the inner rail out of the outer rail until it is fully extended as illustrated below.
3. Press the locking tab down to release the inner rail.
4. Pull the inner rail all the way out.
5. Repeat steps 1-3 for the second outer rail.

Figure 2-2. Extending and Releasing the Inner Rail



Slide rail mounted equipment is not to be used as a shelf or a work space.

Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

Installing The Inner Rails on the Chassis

To install the inner rails, use the procedure below.

Installing the Inner Rails (Figures 2-3 and 2-4)

1. Confirm that the left and right inner rails have been correctly identified.
2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis until the rail clicks into the locked position, which secures the inner rail to the chassis.
4. Secure the inner rail to the chassis with the screws provided.
5. Repeat steps 1 through 4 above for the other inner rail.

Figure 2-3. Installing the Inner Rails

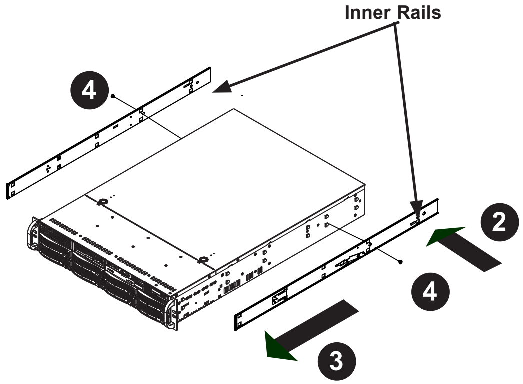
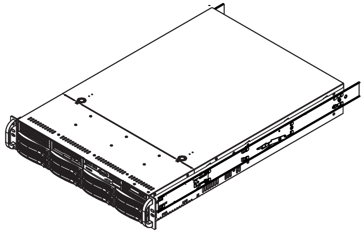


Figure 2-4. Inner Rails Installed on the Chassis
(The chassis above are an example only. Actual chassis may differ slightly)



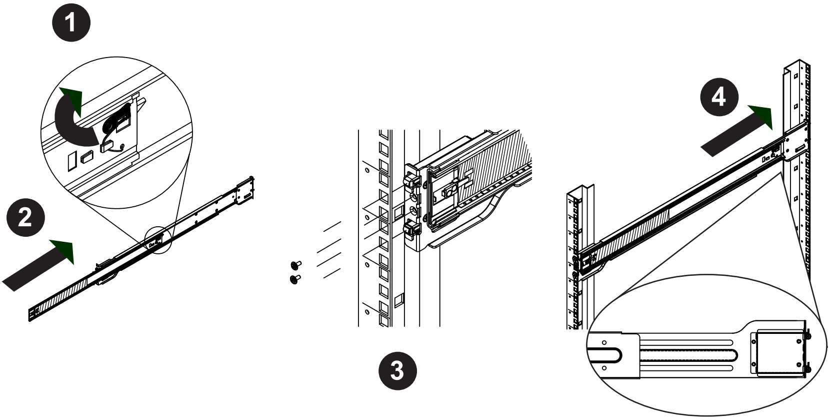
Installing the Outer Rails on the Rack

Use the procedure below to install the outer rails onto the rack.

Installing the Outer Rails (Figure 2-5)

1. Press upward on the locking tab at the rear end of the middle rail.
2. Push the middle rail back into the outer rail.
3. Hang the hooks of the front of the outer rail onto the slots on the front of the rack. If necessary, use screws to secure the outer rails to the rack, as illustrated above.
4. Pull out the rear of the outer rail, adjusting the length until it fits within the posts of the rack.
5. Hang the hooks of the rear portion of the outer rail onto the slots on the rear of the rack. If necessary, use screws to secure the rear of the outer rail to the rear of the rack.
6. Repeat steps 1-5 for the remaining outer rail.

Figure 2-5. Extending and Releasing the Outer Rails



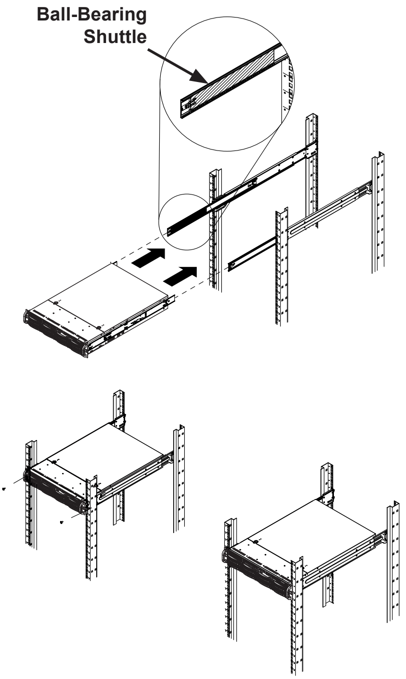
Standard Chassis Installation

Installing the Chassis into a Rack (Figure 2-6)

1. Confirm that the inner rails are properly installed on the chassis.
2. Confirm that the outer rails are correctly installed on the rack.
3. Pull the middle rail out from the front of the outer rail and make sure that the ball-bearing shuttle is at the front locking position of the middle rail.
4. Align the chassis inner rails with the front of the middle rails.
5. Slide the inner rails on the chassis into the middle rails, keeping the pressure even on both sides, until the locking tab of the inner rail clicks into the front of the middle rail, locking the chassis into the fully extended position.
6. Depress the locking tabs of both sides at the same time and push the chassis all the way into the rear of the rack.
7. If necessary for security purposes, use screws to secure the chassis handles to the front of the rack.

Note: The figure below is for illustrative purposes only. Always install servers to the bottom of the rack first.

Figure 2-6. Installing into a Rack



Chapter 3

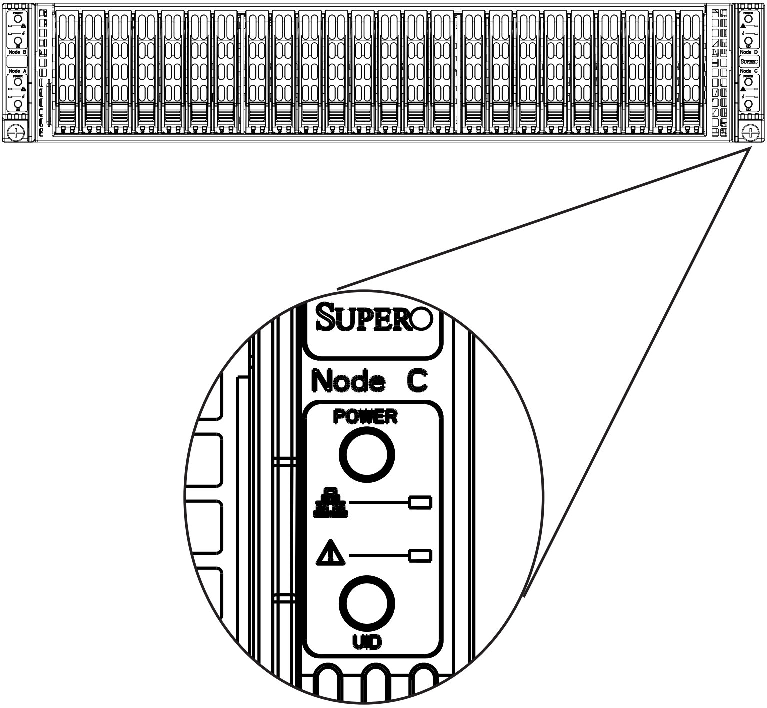
System Interface

3-1 Overview

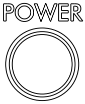
There are several LEDs on the control panel and on the drive carriers to keep you constantly informed of the overall status of the system. SC217 models include four front panels on the handles of the chassis which control each of the systems.

This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

Figure 3-1. Control Panel

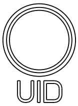


3-2 Control Panel Button



Power

The main power button on each of the four control panels is used to apply or remove power from the power supply to each of the four systems in the chassis. Turning power to the system off with this button removes the main power, but keeps standby power supplied to the system. Therefore, you must unplug the AC power cord from any external power source before servicing. The power button has a built-in LED which will turn green when the power is on.



UID

When used with a UID compatible motherboard, the UID button is used to turn on or off the blue light function of the LED. This is built into the front side of the UID button and at the rear end of each motherboard node, for those motherboards which support it. Once the blue light is activated, the unit can be easily located in very large racks and server banks.

3-3 Control Panel LEDs

The four control panels are located on the front handle of the SC217 chassis. Each control panel has two additional LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Alert

This LED is illuminated when an alert condition occurs.

- A solid red light indicates an overheat condition in the system.
- A flashing red light which flashes in one second intervals indicates a fan failure.

- A flashing red light which flashes in four second interfals indicates a power failure.

When notified of an alert, check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers and air shrouds are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the temperature is too high or a fan does not function properly.

NIC

Indicates network activity on either LAN1 or LAN2 when flashing.

3-4 Drive Carrier LEDs

SATA Drives

Each drive carrier has two LEDs.

- Blue: When illuminated, this blue LED (on the front of the drive carrier) indicates drive activity. A connection to the backplane enables this LED to blink on and off when that particular drive is being accessed.
- Red: The red LED to indicate a hard drive failure. If one of the hard drives fail, you should be notified by your system management software.

Notes

Chapter 4

Standardized Warning Statements for AC Systems

4-1 About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis.

These warnings may also be found on our web site at http://www.supermicro.com/about/policies/safety_information.cfm.

Warning Definition

Warning!

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

警告の定義

この警告サインは危険を意味します。
人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、
電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾的声明号码找到此设备的安全性警告说明的翻译文本。

此警告符號代表危險。

您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

Warnung

WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים.

יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .
قبل أن تعمل على أي معدات، كن على علم بالمخاطر الناجمة عن الدوائر
الكهربائية
وكن على دراية بالممارسات الوقائية لمنع وقوع أي حوادث
استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

안전을 위한 주의사항

경고!

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

Installation Instructions

Warning!

Read the installation instructions before connecting the system to the power source.

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前,请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

¡Advertencia!

Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Attention

Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

Circuit Breaker

Warning!

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。
保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

此产品的短路(过载电流)保护由建筑物的供电系统提供，确保短路保护设备的额定电流不大于250V，20A。

警告

此產品的短路(過載電流)保護由建築物的供電系統提供，確保短路保護設備的額定電流不大於250V，20A。

Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à :250 V, 20 A.

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-250 V, 20 A

هذا المنتج يعتمد على معدات الحماية من الدوائرالقصيرة التي تم تثبيتها في المبنى
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من: 20A, 250V

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다. 보호장치의 정격이 반드시 250V(볼트), 20A(암페어)를 초과하지 않도록 해야 합니다.

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw electrische installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan 220V, 20A.

Power Disconnection Warning

Warning!

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.

電源切断の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、

システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du chassis pour installer ou enlever des composants de systéme.

אזהרה מפני ניתוק חשמלי

אזהרה !
יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק
לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.

يجب فصل النظام من جميع مصادر الطاقة وإزالة سلك الكهرباء من وحدة امداد الطاقة قبل
الوصول إلى المناطق الداخلية للهيكل لتثبيت أو إزالة مكونات الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 섀시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing

Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen

Equipment Installation

Warning!

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

機器の設置

トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可されています。

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

אזהרה!

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتركيب واستبدال أو خدمة هذا الجهاز

경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

Restricted Area

Warning!

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いての み出入りが可能です。

警告

此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

警告

此裝置僅限安裝於進出管制區域，進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

Warnung

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

Attention

Cet appareil doit être installée dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

אזור עם גישה מוגבלת

אזהרה!
יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת כלי אבטחה בלבד (מפתח, מנעול וכד׳).

تم تخصيص هذه الوحدة لتركيبها في مناطق محظورة .
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،
قفل ومفتاح أو أي وسيلة أخرى للالأمان

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 특수도구, 잠금 장치 및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

Waarschuwing

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang. Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

Battery Handling

Warning!

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions

電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

警告

电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

警告

電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

Warnung

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

¡Advertencia!

Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

אזהרה !

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף
את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك
استبدال البطارية
فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة
تخلص من البطاريات المستعملة وفقا لتعليمات الشركة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontploffingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

Redundant Power Supplies

Warning!

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。
ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein trom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

Attention

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

אם קיים יותר מספק אחד

אזהרה!
ליחדה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן
את היחידה.

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.
يجب إزالة كافة الاتصالات لعزل الوحدة عن الكهرباء

경고!

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다. 이 장치에 전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다.

Waarschuwing

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken.

Backplane Voltage

Warning!

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

バックプレーンの電圧

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。修理する際には注意ください。

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche Spannungen oder Energien auf. Vorsicht bei der Wartung.

¡Advertencia!

Cuando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso. Tenga cuidado cuando lo revise.

Attention

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

מתח בפנל האחורי

אזהרה !

קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך העבודה.

هناك خطر من التيار الكهربائي أوالطاقة الموجودة على اللوحة
عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생합니다. 서비스 작업 시 주의하십시오.

Waarschuwing

Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

Comply with Local and National Electrical Codes

Warning!

Installation of the equipment must comply with local and national electrical codes.

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

La instalacion del equipo debe cumplir con las normas de electricidad locales y

nacionales.Attention

L'équipement doit être installé conformément aux normes électriques nationales et locales.

תיאום חוקי החשמל הארצי

אזהרה !
התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية و الوطنية المتعلقة بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

Product Disposal

Warning!

Ultimate disposal of this product should be handled according to all national laws and regulations.

製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

סילוק המוצר

אזהרה !
סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين واللوائح الوطنية

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

Hot Swap Fan Warning

Warning!

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

ファン・ホットスワップの警告

シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告

当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告

當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung

Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

Los ventiladores podran dar vuelta cuando usted quite ell montaje del ventilador del chasis. Mandtenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

אזהרה !

כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

من الممكن أن المراوح لا تزال تدورعند إزالة كتلة المروحة من الهيكل يجب إبقاء
الأصابع ومفكات البراغي
وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

섀시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조림품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

Power Cable and AC Adapter

Warning!

When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices than products designated by Supermicro only.

電源コードとACアダプター

製品を設置する場合、提供または指定された接続ケーブル、電源コードとACアダプターを使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)を Supermicroが指定する製品以外に使用することを禁止しています。

警告

安装此产品时,请使用本身提供的或指定的连接线,电源线和电源适配器.使用其它线材或适配器可能会引起故障或火灾。除了Supermicro所指定的产品,电气用品和材料安全法律规定禁止使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

警告

安裝此產品時,請使用本身提供的或指定的連接線,電源線和電源適配器.使用其它線材或適配器可能會引起故障或火災。除了Supermicro所指定的產品,電氣用品和材料安全法律規定禁止使用未經UL或CSA認證的線材。(線材上會顯示UL/CSA符號)。

Warnung

Bei der Installation des Produkts, die zur Verfügung gestellten oder benannt Anschlusskabel, Stromkabel und Netzteile. Verwendung anderer Kabel und Adapter kann zu einer Fehlfunktion oder ein Brand entstehen. Elektrische Geräte und Material Safety Law verbietet die Verwendung von UL-oder CSA-zertifizierte Kabel, UL oder CSA auf der Code für alle anderen elektrischen Geräte als Produkte von Supermicro nur bezeichnet gezeigt haben.

¡Advertencia!

Al instalar el producto, utilice los cables de conexión previstos o designados, los cables y adaptadores de CA. La utilización de otros cables y adaptadores podría ocasionar un mal funcionamiento o un incendio. Aparatos Eléctricos y la Ley de Seguridad del Material prohíbe el uso de UL o CSA cables certificados que tienen UL o CSA se muestra en el código de otros dispositivos eléctricos que los productos designados por Supermicro solamente.

Attention

Lors de l'installation du produit, utilisez les bables de connection fournis ou désigné. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et de loi sur la sécurité Matériel interdit l'utilisation de UL ou CSA câbles certifiés qui ont UL ou CSA indiqué sur le code pour tous les autres appareils électriques que les produits désignés par Supermicro seulement.

חשמליים ומתאמי AC

אזהרה !
כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים AC אשר
נועדו וסופקו לשם כך. שימוש בכל כבל או מתאם אחר יכול לגרום לתקלה או
קצר חשמלי. על פי חוקי שימוש במכשירי חשמל וחוקי בטיחות, קיים איסור
להשתמש בכבלים המוסמכים ב- UL או ב- CSA (כשאר מופיע עליהם קוד של
UL/CSA) עבור כל מוצר חשמלי אחר שלא צוין על ידי סופרקמיקרו בלבד.

عند تركيب الجهاز يجب استخدام كابلات التوصيل، والكابلات الكهربائية
ومحولات التيار المتردد
التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق.
تم توفيرها لك مع المنتج
الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات CSA أو UL
معتمدة من قبل
لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro
(التي تحمل علامة UL/CSA)

경고!

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, AC어댑터를 사용해야 합니다. 그 밖의 다른 케이블들이나 어댑터들은 고장 또는 화재의 원인이 될 수 있습니다. 전기용품안전법 (Electrical Appliance and Material Safety Law)은 슈퍼마이크로에서 지정한 제품들 외에는 그 밖의 다른 전기 장치들을 위한 UL또는 CSA에서 인증한 케이블(전선 위에 UL/CSA가 표시)들의 사용을 금지합니다.

Waarschuwing

Bij het installeren van het product, gebruik de meegeleverde of aangewezen kabels, stroomkabels en adapters. Het gebruik van andere kabels en adapters kan leiden tot een storing of een brand. Elektrisch apparaat en veiligheidsinformatiebladen wet verbiedt het gebruik van UL of CSA gecertificeerde kabels die UL of CSA die op de code voor andere elektrische apparaten dan de producten die door Supermicro alleen.

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the X10DRT-P/PT/PIBF serverboard into the chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the serverboard.

Connecting Data Cables

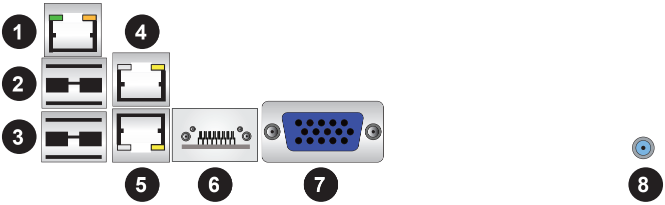
The cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back.

If you need to disconnect any of these cables, you should take care to reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables.

5-3 Rear I/O Ports

See Figure 5-1 below for the and locations of the various rear I/O ports and the UID switch.

Figure 5-1. Rear I/O Ports



Rear I/O Port Locations and Definitions	
1.	Dedicated IPMI LAN
2.	Back Panel USB 3.0 Port 1
3.	Back Panel USB 3.0 Port 0
4.	Gigabit LAN 2
5.	Gigabit LAN 1
6	QSFP (Quad Small Form-factor Pluggable) Connector for Connect-X3 InfiniBand Port
7.	VGA Port
8	UID Switch

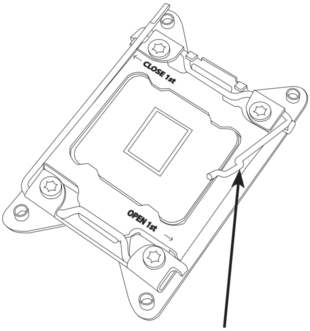
5-4 Processor and Heatsink Installation

Notes:

- Always remove the power cord before adding, removing or changing a CPU.
- When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- If you buy a CPU separately, use only an Intel-certified, multi-directional heatsink.
- Avoid placing direct pressure to the top of the processor package.
- Install the processor into the CPU socket before installing the heatsink.
- Refer to the Supermicro web site for updates on CPU support.

Installing a CPU

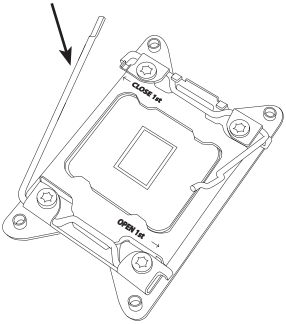
1. There are two levers on the LGA 2011 socket. First press and release the load lever labeled "Open 1st".



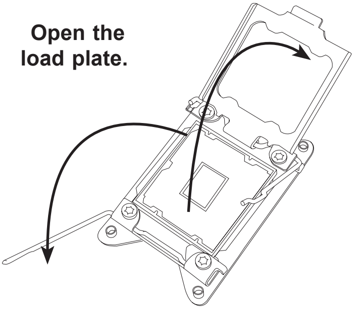
Release the lever labeled "Open 1st"

2. Press the second load lever labeled "Close 1st" to release the load plate from its locked position.

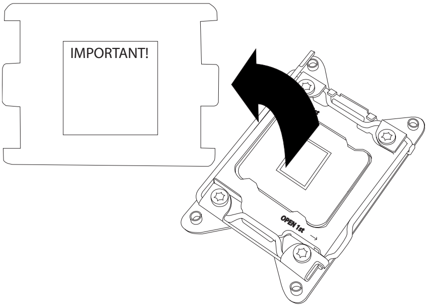
Release the lever labeled "Close 1st"



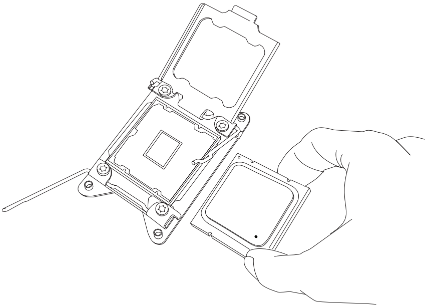
3. With the second lever fully retracted, gently push down on the "Open 1st" lever to loosen the load plate. Lift the load plate with your fingers to open it completely.



4. Pop the plastic cap marked "Warning" out of the load plate.
5. Holding the CPU carefully above the socket, orient the CPU so that all keys and edges will fit the socket.

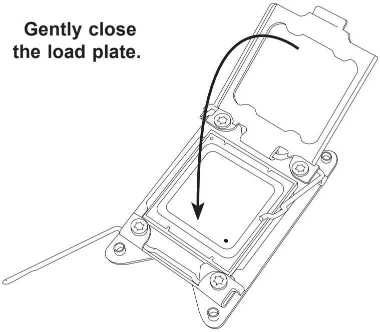


6. Carefully lower the CPU straight down into the socket. Do not move the CPU horizontally, and do not rub the pins of the socket. This may damage the CPU or the socket.

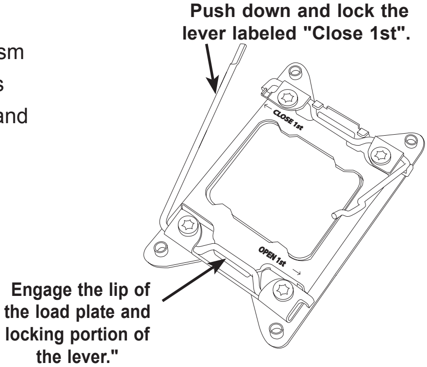


Caution: You can only install the CPU into the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it does not close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

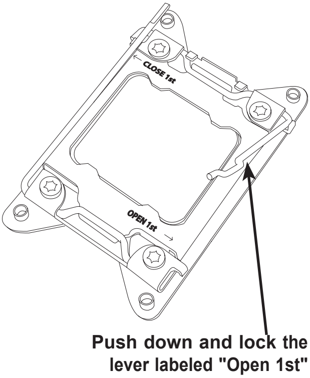
7. With the "Close 1st" lever fully retracted, gently close the load plate.


Gently close
the load plate.

8. Make sure the locking mechanism on the "Close 1st" lever catches the lip of the load plate. Close and lock the "Close 1st" lever.

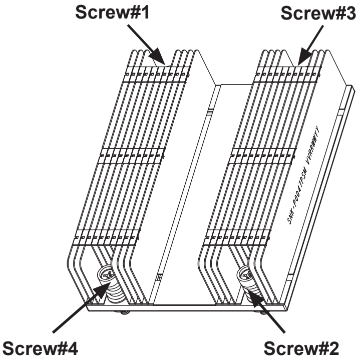

Push down and lock the
lever labeled "Close 1st".
CLOSE 1st
OPEN 1st
Engage the lip of
the load plate and
locking portion of
the lever."

9. Close and lock the "Open 1st" lever.


CLOSE 1st
OPEN 1st
Push down and lock the
lever labeled "Open 1st"

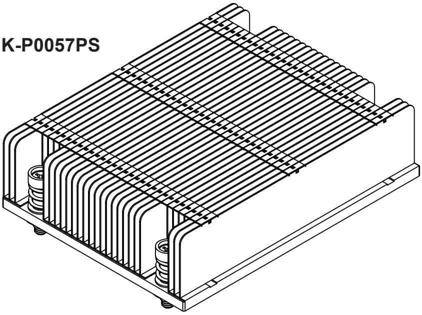
Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die -- the required amount has already been applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the Serverboard's and the Heatsink Bracket underneath.
3. Screw in two diagonal screws (i.e., the #1 and the #2 screws) until just snug (-do not over-tighten the screws to avoid possible damage to the CPU.)
4. Finish the installation by fully tightening all four screws.



SNK-P0047PSM

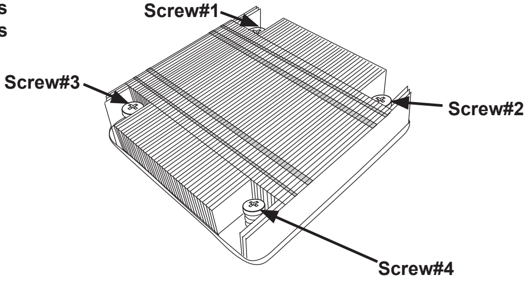
SNK-P0057PS



Removing the Heatsink

Caution: We DO NOT recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to prevent damage to the CPU or the CPU socket.

1. Unscrew the heatsink screws from the serverboard in the sequence as shown in the illustration below.
2. Gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!)
3. Once the heatsink is loosened, remove the heatsink from the CPU socket.
4. Remove the used thermal grease and clean the surface of the CPU and the heatsink, Reapply the proper amount of thermal grease on the surface before reinstalling the heatsink.



Loosen screws in sequence as shown.

5-5 Installing Memory

Installing Memory

1. Insert each memory module vertically into its slot, paying attention to the notch along the bottom of the module to prevent inserting the module incorrectly (see Figure 5-2).
2. Install starting with slot P1/DIMMA1.
3. Gently press down on the memory module until it snaps into place.
4. With two CPUs installed, repeat step 2 to populate the CPU2 DIMM slots.
5. See the tables that follow for details on populating the DIMM slots.

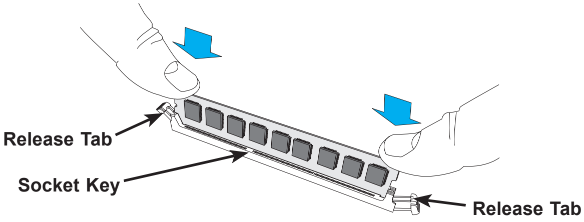
Note: It is highly recommended that you remove the power cord from the system before installing or changing memory modules. Please refer to our web site for memory that has been tested on the X10DRT-P/PT/PIBF serverboard. For best performance, use memory modules of the same type and speed in the same bank.

Memory Support

The X10DRT-P/PT/PIBF has sixteen DIMM slots supporting up to 1024 GB of LRDIMM (Load Reduced DIMM) or 512 GB of RDIMM (Registered DIMM) DDR4-2133/1866/1600 MHz registered ECC memory.

Note: Check the Supermicro website (www.supermicro.com) for the latest memory support information.

Figure 5-2. DIMM Installation



Processor & Memory Module Population Configuration

For the memory to work properly, follow the tables below when populating the DIMM slots.

Processors and their Corresponding Memory Modules								
CPU#	**Corresponding DIMMs**							
CPU 1	P1-DIMMA1	P1-DIMMB1	P1-DIMMC1	P1-DIMMD1	P1-DIMMA2	P1-DIMMB2	P1-DIMMC2	P1-DIMMD2
CPU2	P2-DIMME1	P2-DIMMF1	P2-DIMMG1	P2-DIMMH1	P2-DIMME2	P2-DIMM F2	P2-DIMMG2	P2-DIMMH2

Processor and Memory Module Population for Optimal Performance	
Number of CPUs+DIMMs	**CPU and Memory Population Configuration Table**
1 CPU & 2 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1
1 CPU & 4 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1
1 CPU & 5~8 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1 + Any memory pairs in P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2 slots
2 CPUs & 4 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1
2 CPUs & 6 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1
2 CPUs & 8 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1
2 CPUs & 8~16 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1 + Any memory pairs in P1, P2 DIMM slots
2 CPUs & 16 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1,P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2, P2-DIMME2/P2-DIMMF2/P2-DIMMG2/P2-DIMMH2

Populating DDR4 RDIMM/LRDIMM ECC Memory Modules

Type	**Ranks Per DIMM and Data Width**	**DIMM Capacity (GB)**		**Speed (MT/s)** **Voltage (V)**					
				1 Slot Per Channel	2 Slots Per Channel				
				1DPC	1DPC	2DPC	1DPC		
		4Gb	**8Gb**	1.2V	1.2V	1.2V	1.2V	1.2V	1.2V
RDIMM	**SRx4**	**8GB**	**16GB**	2133	2133	1866	2133	1866	1600
RDIMM	**SRx8**	**4GB**	**8GB**	2133	2133	1866			
RDIMM	**DRx8**	**8GB**	**16GB**	2133	2133	1866	2133	1866	1600
RDIMM	**DRx4**	**16GB**	**32GB**	2133	2133	1866			
LRDIMM	**QRx4**	**32GB**	**64GB**	2133	2133	2133	2133	2133	1600

5-6 Adding PCI Expansion Cards

The 2028TP-HTR/HTTR/HTFR includes one preinstalled riser card per node, designed specifically for use in the SC217HQ+-R2K02B 2U rackmount chassis. This riser card supports one low-profile PCI Express x16 card to fit inside the chassis for each node.

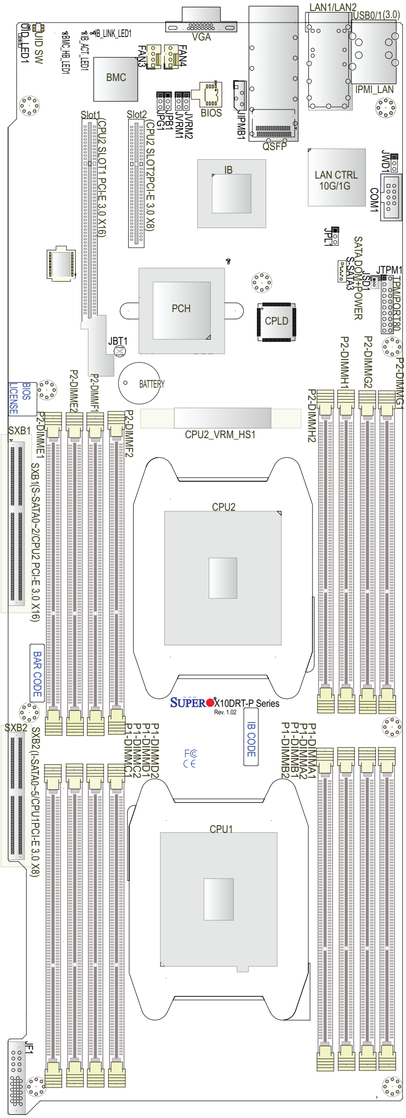
Installing an Expansion Card

1. After powering down the system, remove the PCI slot shield.
2. Fully seat the card into the slot, pushing down with your thumbs evenly on both sides of the card.
3. Finish by using a screw to secure the top of the card shield to the chassis. The PCI slot shield protects the serverboard and its components from EMI and aid in proper ventilation, so make sure it is always in place.

5-7 Serverboard Details

Figure 5-3. X10DRT-P/PT/PIBF Serverboard Layout

(not drawn to scale)


LAN1/LAN2
USB0/1(3.0)
VGA
UID SW
UID_LED1
BMC_HB_LED1
IB_ACT_LED1
IB_LINK_LED1
FAN3
FAN4
BMC
IPMI_LAN
JPG1
JPB1
JVRM1
JVRM2
BIOS
JIPMB1
QSFP
Slot1
Slot2
(CPU2 SLOT1 PCI-E 3.0 X16)
(CPU2 SLOT2PCI-E 3.0 X8)
IB
LAN CTRL
10G/1G
JWD1
COM1
JPL1
SATA DOM+POWER
S-SATA3
JSD1
JTPM1
TPM/PORT80
PCH
CPLD
JBT1
BATTERY
BIOS
LICENSE
SXB1
P2-DIMME2
P2-DIMMF1
P2-DIMMF2
P2-DIMME1
P2-DIMMH1
P2-DIMMG2
P2-DIMMG1
P2-DIMMH2
CPU2_VRM_HS1
SXB1(S-SATA0~2/CPU2 PCI-E 3.0 X16)
CPU2
BAR CODE
SUPER X10DRT-P Series
Rev. 1.02
SXB2
SXB2 (I-SATA0~5/CPU1PCI-E 3.0 X8)
P1-DIMMD2
P1-DIMMD1
P1-DIMMC2
P1-DIMMC1
IB CODE
P1-DIMMA1
P1-DIMMA2
P1-DIMMB1
P1-DIMMB2
CPU1
JF1

Notes

- "■" indicates the location of Pin 1.
- Jumpers/LEDs not indicated are for testing purposes only.

X10DRT-P/PT/PIBF Quick Reference

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Section 5-9
JPB1	BMC Enabled	Pins 1-2 (Enabled)
JPG1	VGA Enabled	Pins 1-2 (Enabled)
JPL1	GLAN1/GLAN2 Enable	Pins 1-2 (Enabled)
JWD1	Watch Dog	Pins 1-2 (RST)

Connector	Description
COM1	COM Port 1
FAN3/FAN4	System Fan Headers
JF1	Supermicro Proprietary Slot for Add-On Card for Power, Front Control Panel
JIPMB1	4-pin External BMC I^2C Header (for an IPMI Card)
JSD1	SATA DOM (Device On Module) Power Connector
JTPM1	TPM (Trusted Platform Module)/Port 80
LAN1/2	Gb Ethernet Ports 1/2
(IPMI) LAN	Dedicated IPMI LAN Port
QSFP	Quad-channel Small Form-factor Pluggable (QSFP) Transceiver Connector used as Connect-X3 InfiniBand Port *(X10DRT-PIBF)
S-SATA3	SATA DOM (Disk On Module) with Power-pin Connector
(CPU2) Slot1	PCI-E 3.0 x16 Slot supported by CPU2
(CPU2) Slot2	PCI-E 3.0 x8 Slot supported by CPU2
SXB2	I-SATA 0-5/PCI-E 3.0 x8 Slot supported by CPU1
SXB1	S-SATA 0-2/PCI-E 3.0 x16 Slot supported by CPU2
UID SW	UID (Unit Identifier) Switch
USB0/1	USB 3.0 Ports
VGA	VGA Port

LED	State
BMC_HB_LED1 (BMC Heartbeat LED)	Green (Blinking): BMC Normal
IB_ACT_LED1*	Yellow (Blinking): InfiniBand Active
IB_LINK_LED1*	Green (On): InfiniBand On (Link LED)
UID LED1 (Unit Identifier LED)	Blue (Blinking): Unit Identified

*X10DRT-PIBF only.

5-8 Connector Definitions

Main Power

Main power to the serverboard is supplied through the system backplane (BPN-SAS3-217HQ), which receives power directly from the power supply. One hard drive backplane in each node (BPN-ADP-6SATA3P) plugs into system backplane and the JF1 connector on the serverboard

Ethernet LAN Ports

Two Gigabit Ethernet ports (LAN1/2) are located on the I/O backplane on theX10DRT-P and X10DRT-PIBF. The X10DRT-PT features two 10 Gb Ethernet ports, also designated LAN1/2. In addition, an IPMI Dedicated LAN is located above USB 0/1 ports on the backplane to provide KVM support for IPMI 2.0. All ports accept RJ45 type cables.

Note: Refer to the LED Indicator Section for LAN LED information.

Universal Serial Bus (USB)

Two USB 3.0 ports (USB 0/1) are located on the rear I/O panel. See the table on the right for pin definitions.

USB0/1 Pin Definitions

Pin#	Definition
1	+5V
2	D-
3	D+
4	Ground
5	RX-
6	RX+
7	Ground
8	TX-
9	TX+

QSFP Connector

The Quad Connector-X3 QDR 40 GB/s or FDR 56 GT/s (4-channel) Small Form-factor Pluggable (QSFP) connector used as an InfiniBand (IB) port is located on the backpanel on the X10DRT-PIBF. The IB connection is primarily used for High-performance computing.

VGA Port

A VGA (video) port is provided on the I/O backplane. This connector is used to provide video and CRT display.

Unit Identifier Switch

A Unit Identifier (UID) switch (SW1) and an LED indicator are located to the right of the VGA port. When the user presses the UID switch, the UID indicator will be turned on. Press the UID switch again to turn off the UID LED. The UID indication provides easy identification of a system unit that may be in need of service.

IPMB I^{2}C SMB

A System Management Bus header for the IPMI slot is located at JIPMB1. Connect an appropriate cable here to use the IPMB I^{2}C connection on your system.

SMB Header Pin Definitions

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Fan Headers

This serverboard has two system fan headers (Fan 3/Fan 4). These 4-pin fans headers are backward compatible with traditional 3-pin fans. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by Thermal Management via the IPMI 2.0 interface. See the table on the right for pin definitions.

Fan Header Pin Definitions

Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

DOM Power Connector

A power connector for SATA DOM (Disk On Module) devices is located at JSD1. Connect an appropriate cable here to provide power for your SATA DOM devices.

DOM PWR Pin Definitions

Pin#	Definition
1	+5V
2	Ground
3	Ground

SATA DOM + Power Conection

A SATA DOM with power-pin is located at S-SATA3. Install a SATA device here to use onboard SATA connections, which are supported by the Intel PCH.

TPM Header/Port 80

A Trusted Platform Module/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. See the table on the right for pin definitions.

TPM/Port 80 Header Pin Definitions

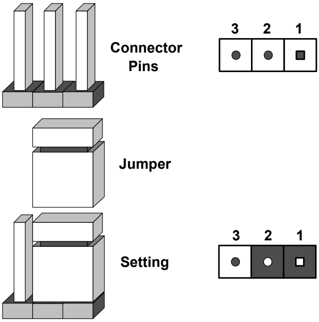
Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	+5V (X)
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK	14	SMB_DAT
15	+3V_DUAL	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	LPCPD#	20	LDRQ# (X)

5-9 Jumper Settings

Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the serverboard layout page for jumper locations.

Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



JBT1 contact pads

CMOS Clear

JBT1 is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

1. First power down the system and unplug the power cord(s). It is also recommended that you remove the onboard battery from the serverboard.
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS*.

LAN Ports Enable/Disable

JPL1 enables or disables the LAN1/2 Ethernet ports on the serverboard. See the table on the right for jumper settings. The default setting is Enabled.

LAN Enable Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Watch Dog Enable/Disable

Watch Dog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate non-maskable interrupt signals for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watch Dog Jumper Settings

Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

VGA Enable

Jumper JPG1 allows the user to enable the onboard VGA connectors. The default setting is pins 1-2 to enable the connection. See the table on the right for jumper settings.

VGA Enable Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

BMC Enable

Jumper JPB1 allows you to enable the onboard BMC (Baseboard Management Controller) to provide IPMI 2.0/KVM support on the serverboard. Be sure to remove the power cord before closing pins 2-3 to disable the BMC. See the table on the right for jumper settings.

BMC Enable Jumper Settings

Jumper Setting	Definition
Pins 1-2	BMC Enabled
Pins 2-3	Normal

5-10 Onboard Indicators

LAN Port LEDs

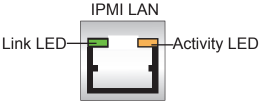
The LAN ports are located on the rear I/O panel. On each Gb LAN port, one LED blinks to indicate activity while the other may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN Port LED (Connection Speed Indicator)

LED Color	Definition
Off	10 Mbps
Green	100 Mbps
Amber	1 Gbps

IPMI Dedicated LAN Port LEDs

In addition to the Gigabit Ethernet ports, an IPMI Dedicated LAN is also located above USB ports 0/1. The amber LED on the right indicates activity, while the link LED on the left indicates the speed of the connection. See the table at right for more information.



IPMI LAN Link LED (Left) & Activity LED (Right)

	Color/State	Definition
Link (Left)	Green	100 Mbps
	Amber	1 Gbps
Activity (Right)	Amber: Blinking	Active

BMC Heartbeat LED

A BMC Heartbeat LED is located at BMC_HB_LED1 on the serverboard. When this LED is blinking, BMC functions normally. See the table at right for more information.

BMC Heartbeat LED Status

Color/State	Definition
Green: Blinking	BMC: Normal

Rear UID LED

The rear UID LED is located on the rear of the serverboard. This LED is used in conjunction with the rear UID switch to provide easy identification of a system that might be in need of service.

UID LED Status

Color/State	OS	Status
Blue: On	Windows OS	Unit Identified
Blue: Blinking	Linux OS	Unit Identified

BMC Heartbeat LED

A BMC Heartbeat LED is provided to display BMC status. When blinking, BMC is functioning normally. See the table at right for more information.

BMC Heartbeat LED (LEM1) Status

Color/State	Definition
Green: Blinking	BMC:Normal

InfiniBand LED Indicators

The X10DRT-PIBF has two InfiniBand LED indicators. The green LED is the InfiniBand Link LED and the yellow LED indicates activity. Refer to the tables on the right for details.

InfiniBand Link LED (Green) Status

Color	Status	Definition
Green	Solid	InfiniBand Connected
Off	Off	No connection

InfiniBand Activity LED (Yellow) Status

Color	Status	Definition
Yellow	Solid	InfiniBand: Active
Yellow	Dim	InfiniBand: Connected, Activity: Idle
Off	Off	No connection

HDD/SATA LED (LE3)

An HDD/SATA LED Indicator is located at LE3 on the serverboard. This LED indicates the status of hard drive activities or SATA activities supported by the South Bridge.

HDD/SATA LED (LE3) Status

Status	Definition
On	HDD/SATA Connected
Off	No connection

Rear UID LED

The rear UID LED is located at LE2 on the rear of the serverboard. This LED is used in conjunction with the rear UID switch to provide easy identification of a system that might be in need of service.

UID LED Status

Color/State	OS	Status
Blue: On	Windows OS	Unit Identified
Blue: Blinking	Linux OS	Unit Identified

5-11 PCI-Express and SATA Connections

S-SATA 0-2/CPU2_PCI-Express 3.0 x16 Slot (SXB1)

A CPU2_PCI-Express 3.0 x16 slot and S-SATA 0-2 connections are located on the serverboard.

I-SATA 0-5/CPU1_PCI-Express 3.0 x8 Slot (SXB2)

A CPU1_PCI-Express 3.0 x8 slot and I-SATA 0-5 connections are located on the serverboard.

5-12 Installing Software

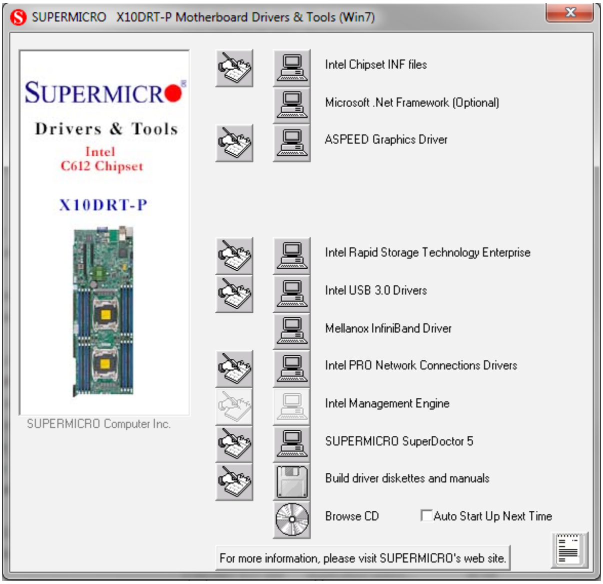
The Supermicro ftp site contains drivers and utilities for your system at ftp://ftp.supermicro.com. Some of these must be installed, such as the chipset driver.

After accessing the ftp site, go into the CDR_Images directory and locate the ISO file for your serverboard. Download this file to create a CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro Website at http://www.supermicro.com/products/. Find the product page for your serverboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-6 should appear.

Figure 5-6. Driver/Tool Installation Display Screen


SUPERMICRO X10DRT-P Motherboard Drivers & Tools (Win7)
SUPERMICRO
Drivers & Tools
Intel
C612 Chipset
X10DRT-P
SUPERMICRO Computer Inc.
Intel Chipset INF files
Microsoft .Net Framework (Optional)
ASPEED Graphics Driver
Intel Rapid Storage Technology Enterprise
Intel USB 3.0 Drivers
Mellanox InfiniBand Driver
Intel PRO Network Connections Drivers
Intel Management Engine
SUPERMICRO SuperDoctor 5
Build driver diskettes and manuals
Browse CD
☐ Auto Start Up Next Time
For more information, please visit SUPERMICRO's web site.

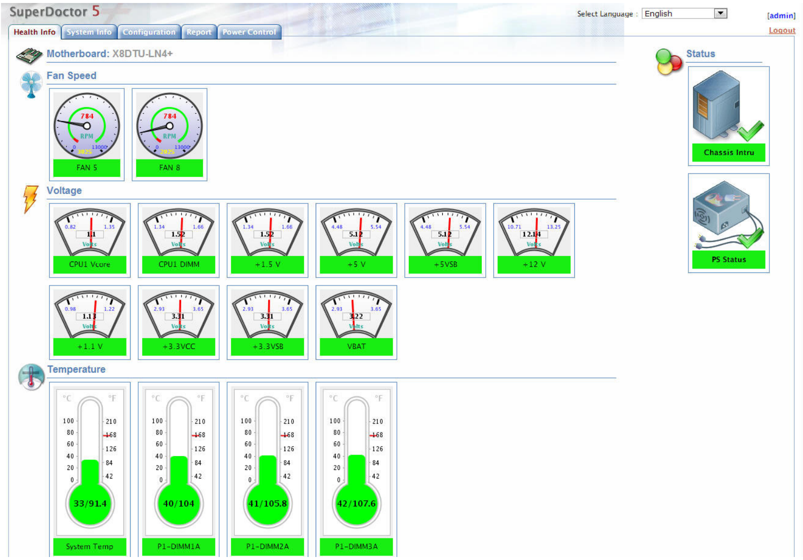
SuperDoctor® 5

The Supermicro SuperDoctor 5 is a program that functions in a command-line or web-based interface in Windows and Linux operating systems. The program monitors system health information such as CPU temperature, system voltages, system power consumption, fan speed, and provides alerts via email or Simple Network Management Protocol (SNMP).

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SD5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

Note: The default User Name and Password for SuperDoctor 5 is admin / admin.

Figure 5-7. SuperDoctor 5 Interface Display Screen (Health Information)

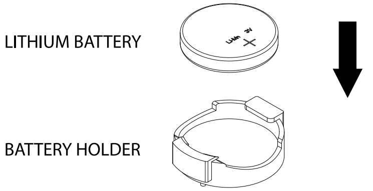

SuperDoctor 5
Select Language : English
[admin]
Logout
Health Info
System Info
Configuration
Report
Power Control
Motherboard: X8DTU-LN4+
Fan Speed
784
RPM
FAN 5
FAN 8
Voltage
1.1
CPU1 Vcore
1.52
CPU1 DIMM
1.52
+1.5 V
5.12
+5 V
5.12
+5VSB
12.14
+12 V
1.13
+1.1 V
3.31
+3.3VCC
3.31
+3.3VSB
3.22
VBAT
Volts
Temperature
33/91.4
System Temp
40/104
P1-DIMM1A
41/105.8
P1-DIMM2A
42/107.6
P1-DIMM3A
Status
Chassis Intru
PS Status

Note: The SuperDoctor 5 program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/nfo/sms_sd5.cfm.

5-13 Onboard Battery

Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Figure 5-8. Installing the Onboard Battery



Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC217HQ+-R2K02B chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

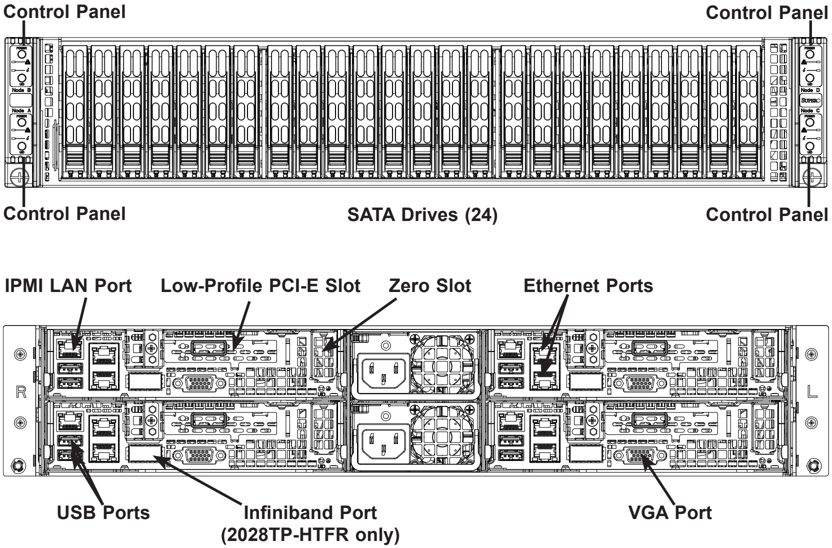
Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, expansion cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Front and Rear Chassis Views


Control Panel
Control Panel
Node B
Node A
Node D
Node C
Control Panel
SATA Drives (24)
Control Panel
IPMI LAN Port
Low-Profile PCI-E Slot
Zero Slot
Ethernet Ports
R
L
USB Ports
Infiniband Port (2028TP-HTFR only)
VGA Port

Note: although only pointed out on one node, the features on the rear of chassis are included on all four nodes.

6-2 Control Panel

The control panel is located on the front of the chassis. The LEDs inform you of system status.

See Chapter 3 for details on the LEDs and the control panel buttons.

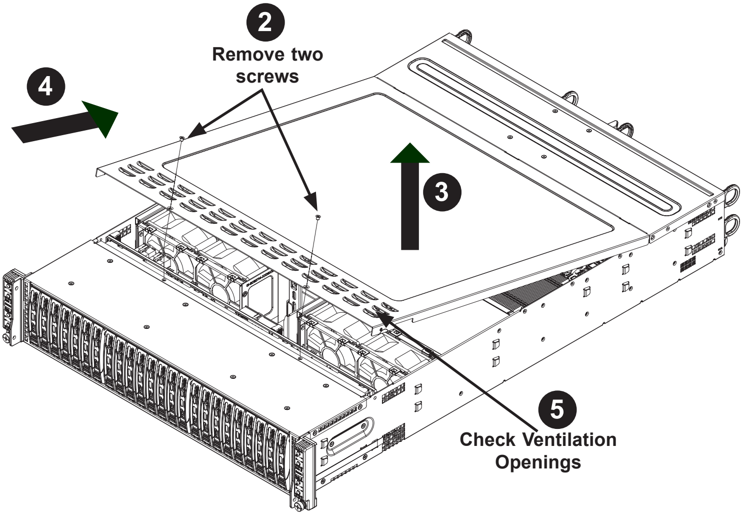
6-3 Chassis Cover

Before operating the SC217HQ+ chassis for the first time, it is important to remove the protective film covering the top of the chassis, in order to allow for proper ventilation and cooling.

Removing the Chassis Cover and Protective Film (Figure 6-2)

1. Uplug the AC power cord from any external power source.
2. Remove the two screws which secure the top cover onto the chassis as shown above.
3. Lift the top cover up and off the chassis.
4. Peel off the protective film covering the top cover and the top of the chassis
5. Check that all ventilation openings on the top cover and the top of the chassis are clear and unobstructed.
6. Replace the chassis cover and reconnect the AC power cord.

Figure 6-2. Removing the Chassis Cover



Caution: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

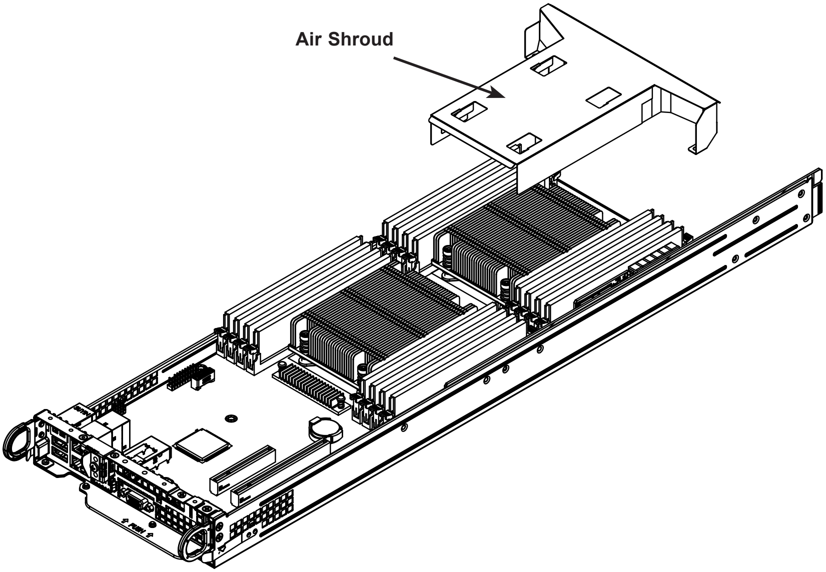
6-4 Air Shrouds

Air shrouds concentrate airflow to maximize fan efficiency. The SC217HQ+ chassis requires air shrouds for each serverboard node. Air shrouds vary depending upon the serverboard used. See the illustrations below.

Installing an Air Shroud (Figure 6-3)

1. Make sure that the serverboard expansion card (if applicable) and all components are properly installed in each serverboard node.
2. Place the first air shroud over the serverboard, as shown below. The air shroud sits behind the system fans and goes over the top of the serverboard and its components.
3. Repeat the procedure for the remaining three serverboard nodes.

Figure 6-3. Installing the Air Shroud



6-5 Checking the Airflow

Checking Airflow

1. Make sure there are no objects obstructing the airflow in and out of the chassis. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.
2. Except for brief periods while swapping hard drives, do not operate the server without drives or the drive carriers in the drive bays. Use only recommended server parts.
3. Make sure no wires or foreign objects obstruct airflow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.
4. The control panel LEDs inform you of system status. See “Chapter 3: System Interface” for details on the LEDs and the control panel buttons.

6-6 System Fans

Four fans provide cooling for the chassis. These fans circulate air through the chassis as a means of lowering the chassis internal temperature. The SC217HQ+ system fans are easy to change modules. There is no need to uninstall any other parts inside the system when replacing fans, and no tools are required for installation.

Optional Fan Configurations

The SC217HQ+H model chassis is designed so that the default configuration of the system is for each serverboard to control two fans. Each serverboard node in the chassis is connected to the backplane through the adapter card, mounted in the serverboard node drawer. In the event that one of the serverboard drawers is removed, then the remaining serverboard will operate both fans.

Fan Configurations Options
SC217H Hot-Swappable Default Configuration
Fans A and B connected to backplane, backplane connected to Node A and B by adapter card
Fans C and D connected to backplane, backplane connected to Nodes A and B by adapter card

Changing a System Fan

1. If necessary, open the chassis while the power is running to determine which fan has failed. (Never run the server for an extended period of time with the chassis cover open.)
2. Remove the failed fan's power cord from the backplane.
3. Lift the fan housing up and out of the chassis.
4. Push the fan up from the bottom and out of the top of the housing.
5. Place the replacement fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
6. Put the fan back into the chassis and reconnect the cable (see Figure 6-4 and Figure 6-5 for details).
7. Confirm that the fan is working properly before replacing the chassis cover.

Figure 6-4. System Fan Placement

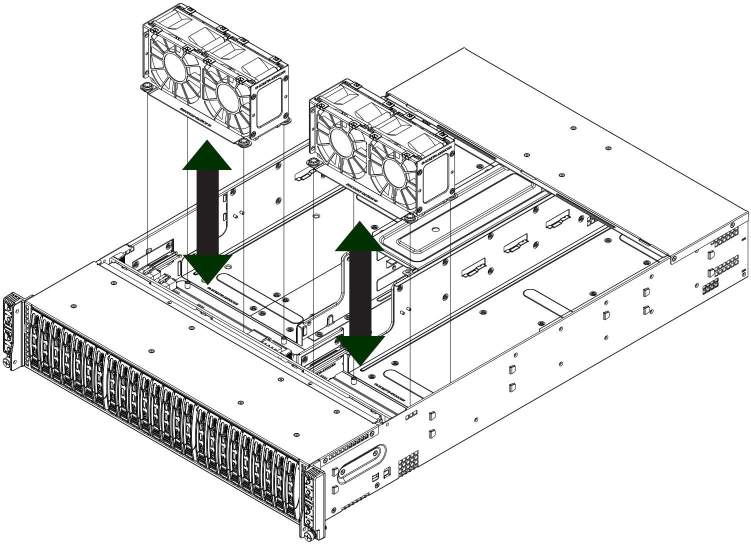
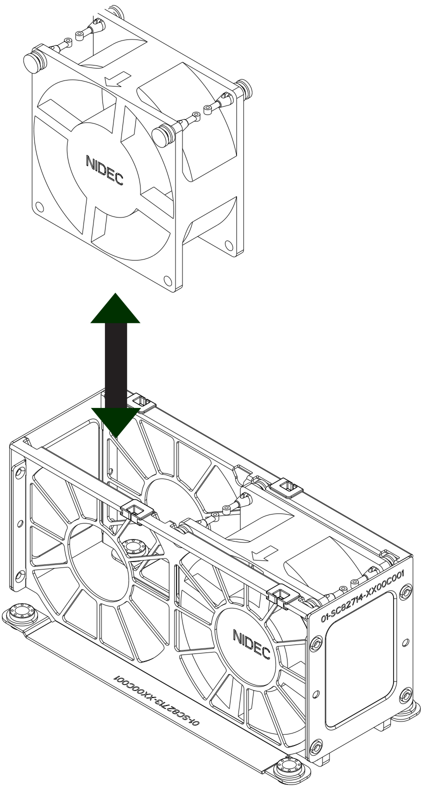


Figure 6-5. Replacing a System Fan in the Fan Housing


NIDEC
NIDEC
01-SC82714-XX00C001
01-SC82713-XX00C001

6-7 Removing and Installing the Backplane

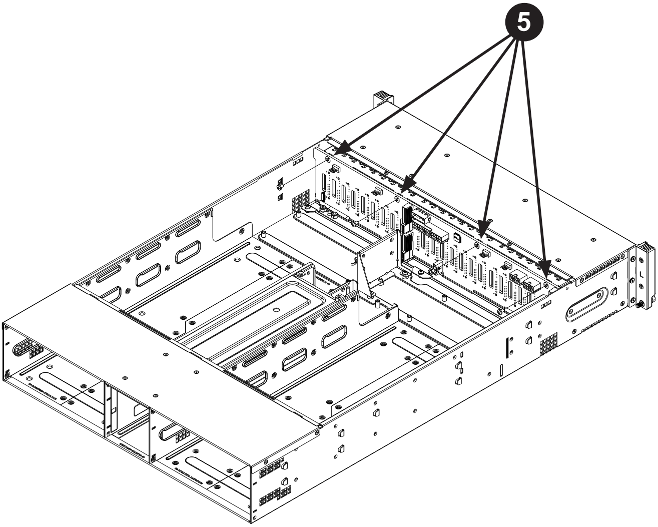
The SC217HQ+ chassis backplane is located behind the hard drives and in front of the front system fans. Although backplane failure rarely occurs, in the event of a backplane failure, follow the instructions below.

Removing the Backplane

Removing the Backplane from the Chassis

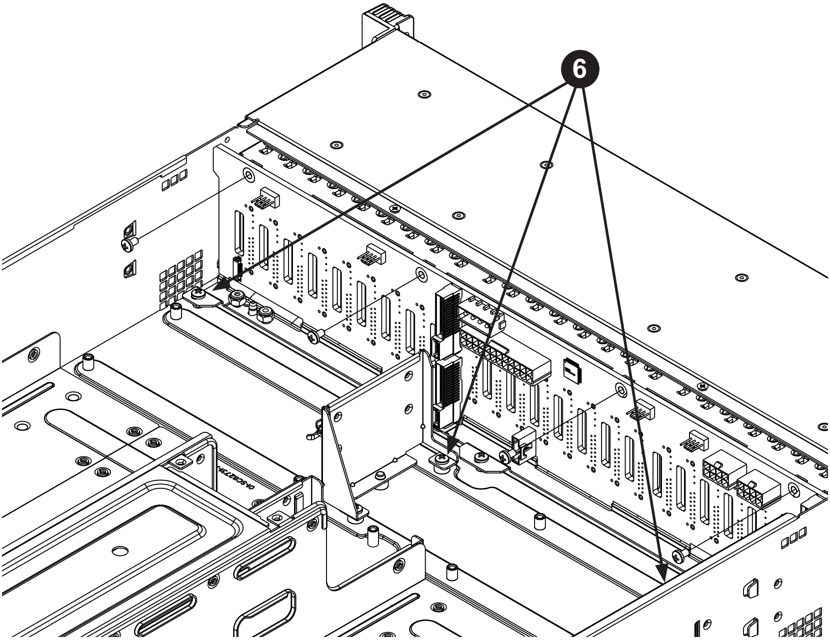
1. Power down and unplug the system from any power source.
2. Remove the chassis cover.
3. Disconnect the cabling to the backplane.
4. Remove all of the hard drive carriers from the front of the chassis.
5. Remove the five upper screws at the top of the backplane and the screw from the side of the chassis, as indicated by the arrows below (Figure 6-6).

Figure 6-6. Removing the Screws at the Top of the Backplane



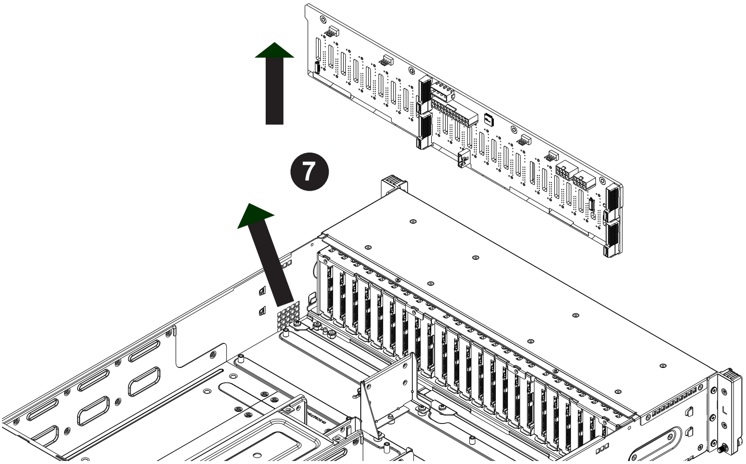
6. Loosen the three screws in the spring bar, located on the floor of the chassis, indicated by the arrows below (Figure 6-7).

Figure 6-7. Loosening the Spring Bar Screws in the Floor of the Chassis



7. Gently ease the backplane up and out of the chassis at a slight angle (Figure 6-8.

Figure 6-8. Removing the Backplane from the Chassis

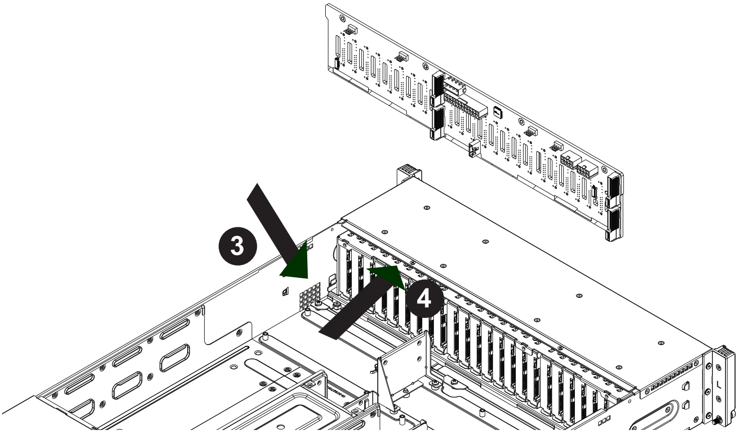


Installing the Backplane

Installing the Backplane into the Chassis (Figure 6-9)

1. Ensure that all of the hard drive carriers have been removed from the bays in the front of the chassis and that the spring bar has been loosened as directed in the previous section.
2. Secure the side mounting bracket to the backplane with the two screws provided.
3. Slide the backplane into the chassis at a slight angle, pushing it up against the side of the chassis.
4. Ease the backplane forward, against the front of the chassis. This will aid in the alignment of the mounting holes.
5. Align the mounting holes in the backplane with the holes in the chassis. Replace the four screws at the top of the backplane and the screw on the side of the chassis.
6. Adjust the spring bar, then tighten the spring bar screws in the floor of the chassis.
7. Reconnect all cables and return the hard drive carriers to their bays in the front of the chassis.
8. Replace the chassis cover and power-up the system.

Figure 6-9. Installing the Backplane



6-8 Installing the Serverboard

I/O Shield

The I/O shield holds the serverboard ports in place. The I/O shield does not require installation.

Permanent and Optional Standoffs

Standoffs prevent short circuits by creating space between the serverboard and the chassis surface. The SC217HQ+ chassis includes permanent standoffs in locations used by the serverboards. These standoffs accept the rounded Phillips head screws included in the SC217HQ+ accessories packaging.

Some serverboards require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are used for these serverboards.

To use an optional standoff, you must place a hexagonal screw through the bottom the chassis and secure the screw with the hexagonal nut (rounded side up).

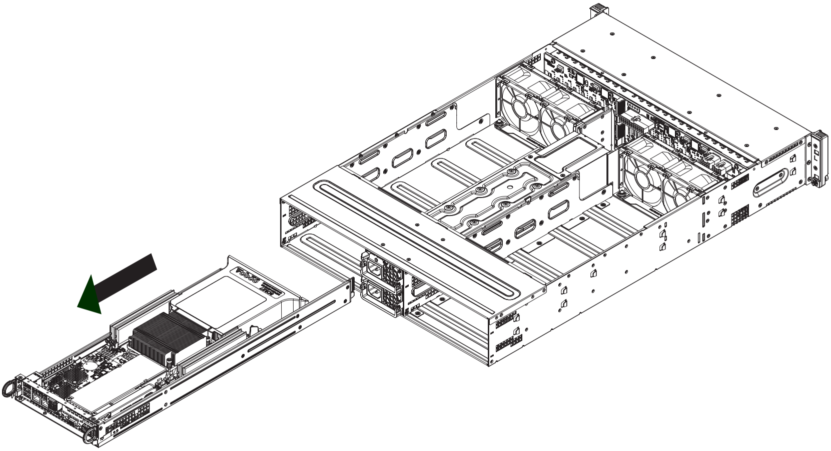
Depending upon the configuration of the serverboard being used, it is also possible that some of the optional standoffs which are pre-installed in the chassis, may need to be removed.

Installing the Serverboard (Figure 6-10 and 6-11)

1. Review the documentation that came with your serverboard. Become familiar with component placement, requirements, precautions, and cable connections.
2. Disconnect the AC power cord from any power source.
3. Pull the serverboard node drawer out of the back of the chassis (Figure 6-10).
4. Remove the expansion card brackets:
   3a. Remove screw securing the expansion card bracket to the back of the node drawer.
   3b. Lift the bracket out of the node drawer.
5. Lay the serverboard in the node drawer aligning the standoffs with the serverboard.
6. Secure the serverboard to the node drawer using the rounded, Phillips head screws included for this purpose.
7. Install the adapter card associated with the serverboard if the chassis is a hot-swappable version. Refer to the next section for instructions on installing the adapter card
8. Secure the CPU(s), heatsinks, and other components to the serverboard as described in the serverboard documentation.

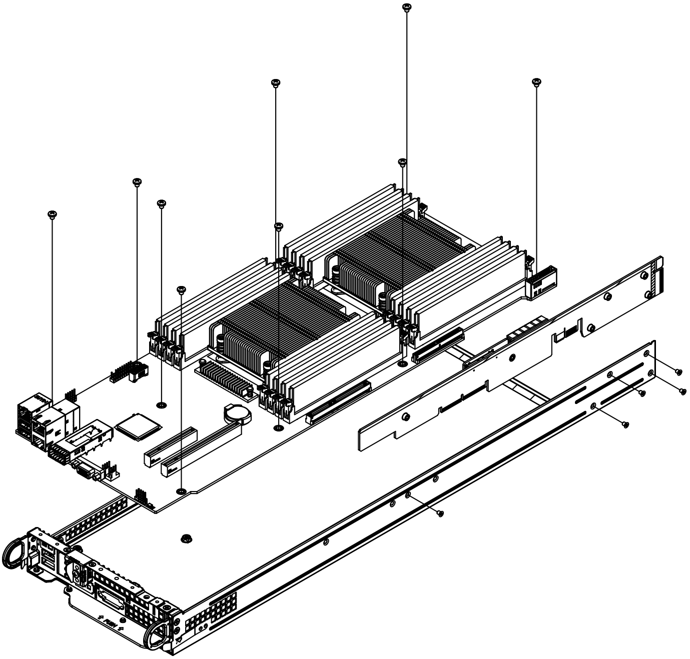
9. Connect the cables between the serverboard, backplane, chassis, front panel, and power supply, as needed. Also, fans may be temporarily removed to allow access to the backplane ports.
10. Replace the expansion card bracket and secure the bracket with a screw.
11. Repeat steps 3 - 5 for the remaining nodes.
12. Connect the AC power cord and power up the system.

Figure 6-10. Removing Serverboard Node Drawer



Note: figure is for illustrative purposes only, the serverboard shown may differ from those used in the 2028TP-HTR/HTTR/HTFR.

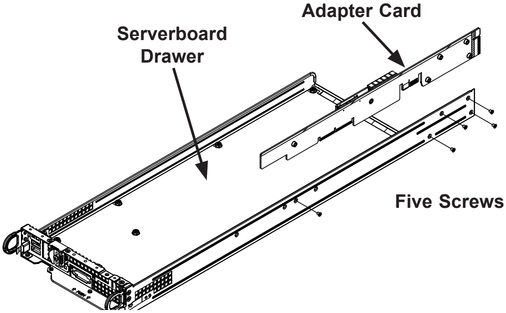
Figure 6-11. Installing the Serverboard in the Serverboard Node Drawer



6-9 Adapter Card Replacement

Each serverboard drawer comes equipped with an adapter card which plugs into the backplane. In the unlikely event that the adapter card needs to be replaced, installation requires only a Phillips head screwdriver.

Figure 6-12. Adapter Card Installation



Removing the Adapter Card (Figure 6-12)

1. Disconnect the AC power cord from any power source.
2. Remove the serverboard drawer from the chassis.
3. Disconnect the wiring, connecting the adapter card to the serverboard if any is present.
4. Remove the five screws securing the adapter card and the spacer plate to the drawer and set them aside for later use.
5. Remove the adapter card and spacer plate from the serverboard drawer.
6. Set the spacer plate aside for later use.

Installing the Adapter Card (Figure 6-12)

1. Make sure the serverboard has been installed properly in the node drawer before installing the adapter card
2. Place the adapter card and spacer plate in the serverboard drawer, aligning the holes in the spacer and the adapter card with the holes in the serverboard drawer.
3. Secure the adapter card and spacer plate to the serverboard drawer, using the five M3 flathead screws which were previously set aside.
4. Reconnect the wiring from the serverboard to the adapter card if necessary.
5. Return the serverboard drawer to the closed position in the chassis.

Expansion Card/PCI Slot Setup

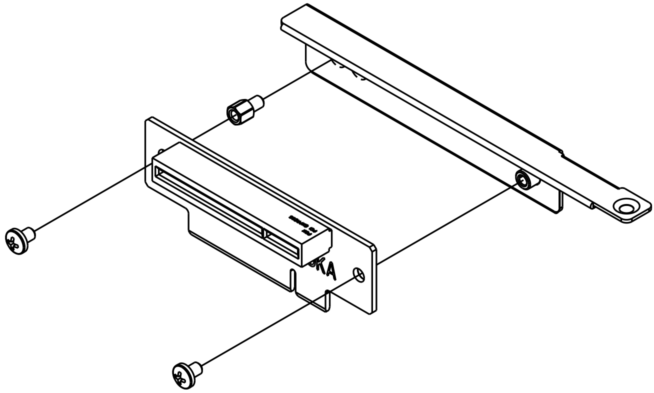
The SC217HQ+ chassis supports one low-profile expansion PCI slot for each node, for a total of four PCI slots in the chassis. To install a low-profile PCI card, follow the following instructions.

Installing the Riser Card

Installing the Riser Card (Figure 6-13)

1. Disconnect the chassis from any power source and lay the chassis on a flat surface.
2. Pull the serverboard node drawer from the chassis.
3. Remove the expansion card bracket.
   3a. Remove the screw securing the expansion bracket to the back of the drawer.
   3b. Lift the bracket out of the serverboard node drawer.
4. Align the riser card mounting hole to the bracket standoff and secure the riser card to the bracket using the two screws included in the accessory box.
5. Inser the riser card along with the riser bracket into the serverboard.
6. Secure the riser bracket to the serverboard node drawer's rear window.

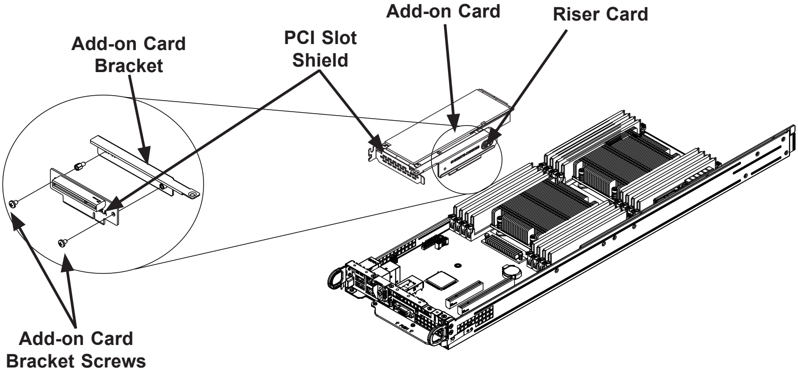
Figure 6-13. Installing the Riser Card



Installing Expansion Cards (Figure 6-14)

1. Disconnect the chassis from any power source, lay the chassis on a flat surface, and open the chassis cover.
2. Pull out the serverboard node drawer from the chassis.
3. Pull open the expansion card PCI slot clip in the rear of the serverboard node drawer.
4. Remove the PCI PCI slot shield.
5. Place the expansion card into the serverboard node drawer.
6. Slide the expansion card into the rear riser card PCI slot and fit the expansion card bracket with the opening in the rear of the serverboard node drawer.
7. Close the expansion card PCI slot clip.
8. Close the cover, reconnect the power supply and power-up the chassis.

Figure 6-14. Installing the Expansion Card


Add-on Card
Riser Card
Add-on Card Bracket
PCI Slot Shield
Add-on Card Bracket Screws

6-10 Drive Bay Installation/Removal

Accessing the Drive Bays

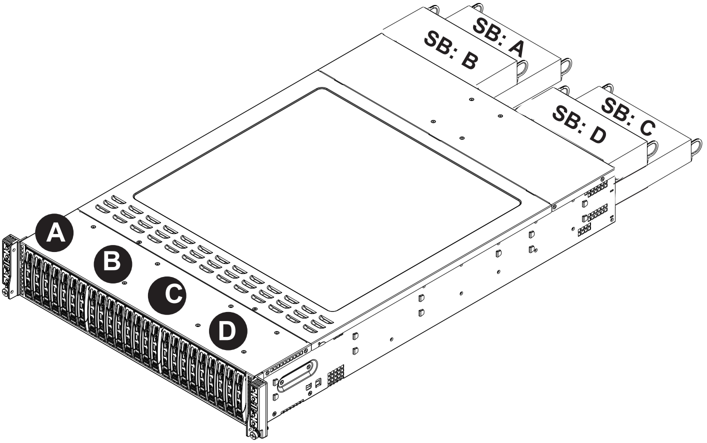
SATA Drives: You do not need to access the inside of the chassis or remove power to replace or swap SAS/SATA drives. Proceed to the next step for instructions. You must use standard 1" high, SATA drives in the system.

Note: Refer to the following FTP site for setup guidelines: <ftp://ftp.supermicro.com/driver/SAS/LSI/LSI_SAS_EmbMRAID_SWUG.pdf> and Supermicro's web site for additional inmformation < http://www.supermicro.com/support/manuals/>.

The SC217HQ+ chassis contains four individual motherboards in separate node drawers. Each serverboard node controls a set of six hard drives. Note that if a serverboard node drawer is pulled out of the chassis, the hard drives associated with that node will power down as well.

Serverboard Drawer Locations in the Chassis	
Serverboard B Controls HDDs B1, B2, B3, B4, B5 and B6	Serverboard D Controls HDDs D1, D2, D3, D4, D5 and D6
Serverboard A Controls HDDs A1, A2, A3, A4, A5 and A6	Serverboard C Controls HDDs C1, C2, C3, C4, C5 and C6

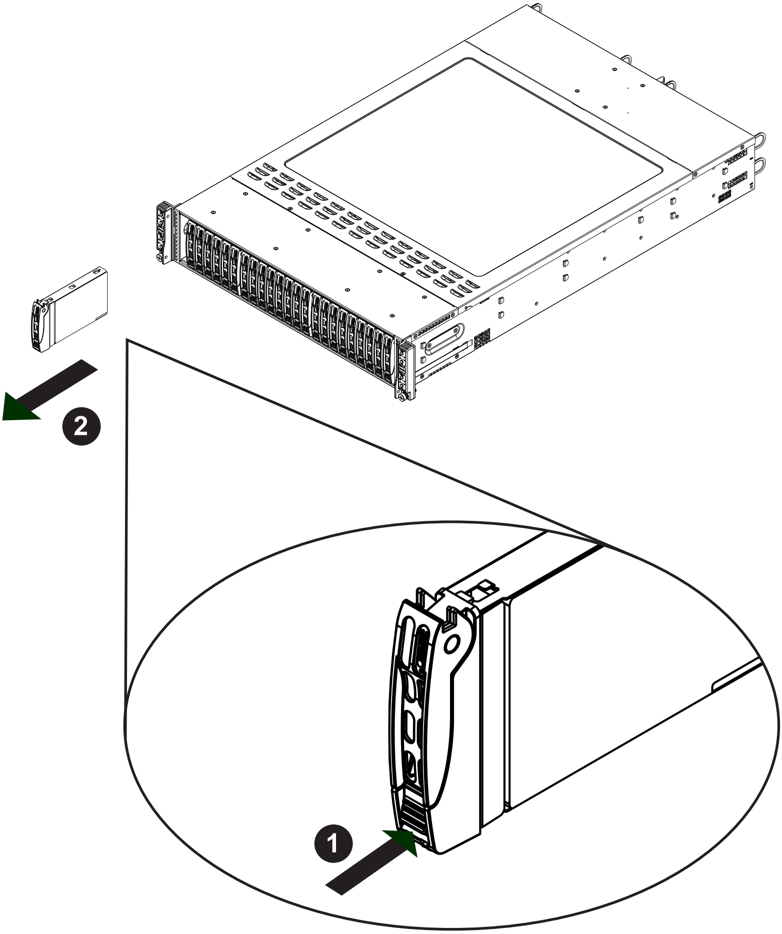
Figure 6-15. Hard Drives and the Corresponding Serverboards



Removing Hard Drive Trays from the Chassis (Figure 6-16)

1. Press the release button on the drive tray. This extends the drive bay handle.
2. Use the handle to pull the drive out of the chassis.

Figure 6-16. Removing Hard Drive



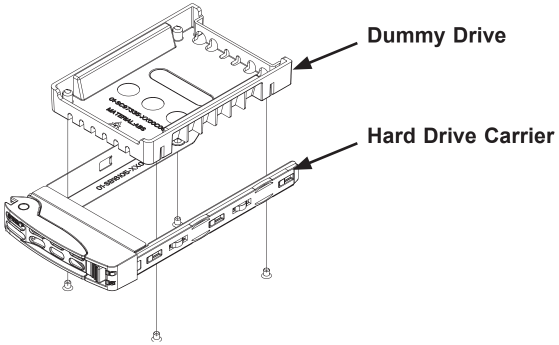
Cauton: Except for short periods of time while swapping hard drives, do not operate the server with the hard drives empty.

Installing a Drive into the Hard Drive Tray

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays.

1. Remove the screws (4) holding connecting the drive tray the carrier.
2. Remove the tray from the carrier.
3. Install a new drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.
4. Secure the hard drive by tightening all four screws.
5. Use the open handle to replace the drive carrier into the chassis. Make sure to close the drive carrier handle.

Figure 6-17. Chassis Drive Tray



Caution: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/files/storage/SAS-CompList.pdf

6-11 Power Supply

The SC217HQ+ chassis includes two 2000 Watt power supplies. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

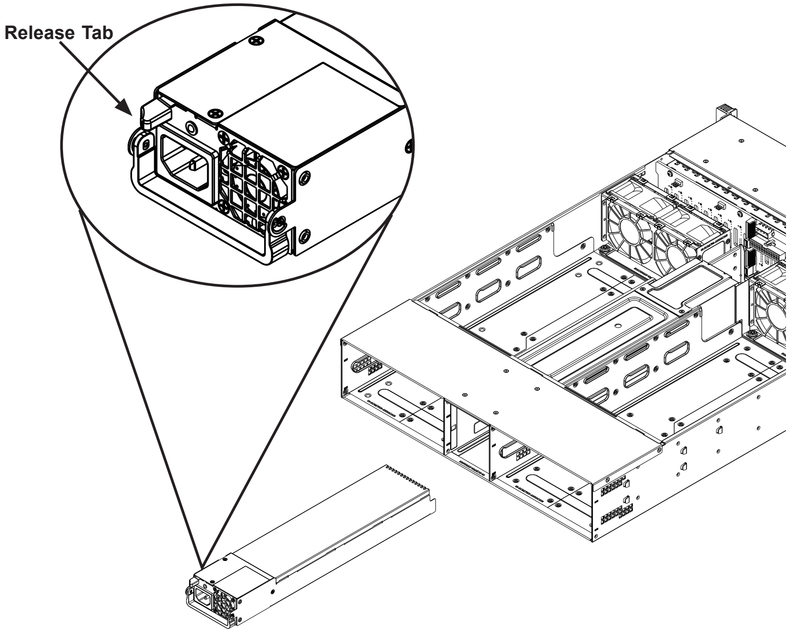
Power Supply Replacement

The SC217HQ+ chassis utilizes two redundant, hot-plug power supplies. In the unlikely event that the power supply unit needs to be replaced, one power supply can be removed, without powering down the system. Replacement units can be ordered directly from Supermicro (See the contact information in the Preface of this manual).

Changing the Power Supply

1. Push the release tab (on the back of the power supply) as illustrated.
2. Pull the power supply out using the handle provided.
3. Push the new power supply module into the power bay until it clicks into the locked position.

Figure 6-18. Changing the Power Supply



Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS setup utility for the X10DRT-P/PT/PIBF. The ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS setup utility screens.

Note: For AMI BIOS recovery, please refer to the UEFI BIOS Recovery Instructions in Appendix C.

Starting BIOS Setup Utility

To enter the AMI BIOS setup utility screens, press the <Delete> key while the system is booting up.

Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The AMI BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

Note: the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.

The AMI BIOS setup utility uses a key-based navigation system called "hot keys." Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F4>, <Enter>, <Esc>, arrow keys, etc.

Note: Options printed in **Bold** are default settings.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS setup utility. This setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

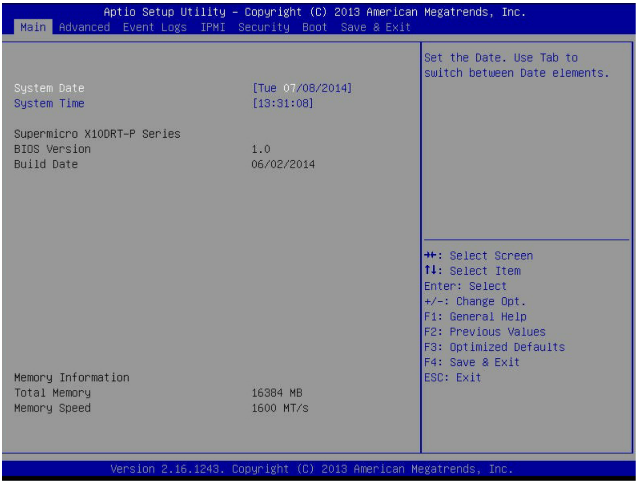
How to Start the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS setup utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

7-2 Main Setup

When you first enter the AMI BIOS setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS setup screen is shown below.



```
Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

System Date                    [Tue 07/08/2014]     Set the Date. Use Tab to
System Time                    [13:31:08]           switch between Date elements.

Supermicro X10DRT-P Series
BIOS Version                   1.0
Build Date                     06/02/2014

                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
Memory Information                                  ESC: Exit
Total Memory                   16384 MB
Memory Speed                   1600 MT/s

Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.
```

The following Main menu items will be displayed:

System Date/System Time

Use this option to change the system date and time. Highlight *System Date* or *System Time* using the arrow keys. Enter new values using the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day MM/DD/YYYY format. The time is entered in HH:MM:SS format.

> **Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

Supermicro X10DRT-P Series

BIOS Version: This item displays the version of the BIOS ROM used in the system.

Build Date: This item displays the date when the version of the BIOS ROM used in the system was built.

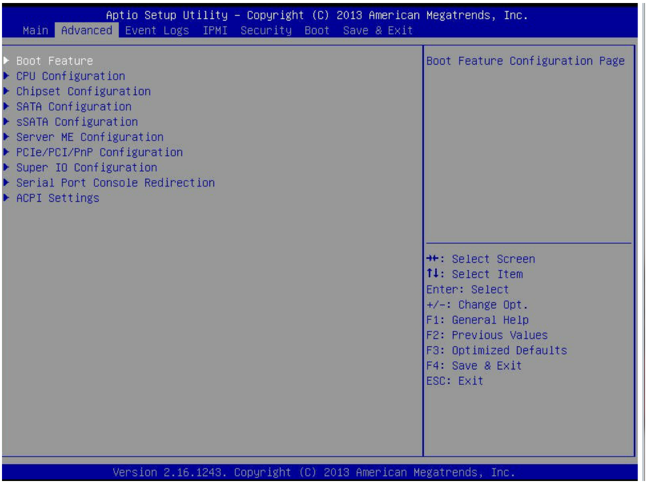
Memory Information

Total Memory: This item displays the total size of memory available in the system.

Memory Speed: This item displays the default speed of the memory modules installed in the system.

7-3 Advanced Setup Configurations

Use the arrow keys to select Advanced setup and press <Enter> to access the submenu items:



```
Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
  Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

▶ Boot Feature                                 Boot Feature Configuration Page
▶ CPU Configuration
▶ Chipset Configuration
▶ SATA Configuration
▶ sSATA Configuration
▶ Server ME Configuration
▶ PCIe/PCI/PnP Configuration
▶ Super IO Configuration
▶ Serial Port Console Redirection
▶ ACPI Settings

                                               →←: Select Screen
                                               ↑↓: Select Item
                                               Enter: Select
                                               +/-: Change Opt.
                                               F1: General Help
                                               F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Exit
                                               ESC: Exit

      Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.
```

Warning: Take Caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or an incorrect BIOS timing setting may cause the system to malfunction. When this occurs, restore the setting to the manufacture default setting.

▶Boot Feature

Quiet Boot

Use this feature to select the screen display between POST messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

Use this item to set the display mode for the Option ROM. Select Keep Current to use the current AddOn ROM display setting. Select Force BIOS to use the Option ROM display mode set by the system BIOS. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock State

Use this feature to set the Power-on state for the Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

Select Enabled to force the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and **Enabled**.

INT19 (Interrupt 19) Trap Response

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Immediate, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at bootup immediately and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Postponed, the ROM BIOS of the host adaptors will not capture Interrupt 19 immediately and allow the drives attached to these adaptors to function as bootable devices at bootup. The options are **Immediate** and Postponed.

Re-try Boot

When EFI Boot is selected, the system BIOS will automatically reboot the system from an EFI boot device after its initial boot failure. Select Legacy Boot to allow the BIOS to automatically reboot the system from a Legacy boot device after its initial boot failure. The options are **Disabled**, Legacy Boot, and EFI Boot.

Power Configuration

Watch Dog Function

Select Enabled to allow the Watch Dog timer to reboot the system when it is inactive for more than 5 minutes. The options are Enabled and **Disabled.**

Power Button Function

This feature controls how the system shuts down when the power button is pressed. Select 4 Seconds Override for the user to power off the system after pressing and holding the power button for 4 seconds or longer. Select Instant Off to instantly power off the system as soon as the user presses the power button. The options are 4 Seconds Override and **Instant Off.**

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last power state before a power loss. The options are Power-On, Stay-Off and **Last State**.

▶CPU Configuration

This submenu displays the following CPU information as detected by the BIOS. It also allows the user to configure CPU settings.

- Processor Socket
- Processor ID
- Processor Frequency
- Processor Max Ratio
- Processor Min Ratio
- Microcode Revision
- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- CPU 1 Version
- CPU 2 Version

Clock Spread Spectrum

Select Enabled to allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disabled** and Enabled.

Execute Disable Bit (Available if supported by the OS & the CPU)

Select Enable for Execute Disable Bit Technology support, which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor to damage the system during an attack. This feature is used in conjunction with the items: "Clear MCA," "VMX," "Enable SMX," and "Lock Chipset" for Virtualization media support. The options are **Enable** and Disable. (Refer to Intel and Microsoft websites for more information.)

PPIN Control

Select Unlock/Enable to use the Protected-Processor Inventory Number (PPIN) in the system. The options are **Unlock/Enable** and Unlock/Disable.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enable, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disable and **Enable**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

Select Enable for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disable for the CPU to prefetch both cache lines for 64 bytes. The options are Disable and **Enable**.

> **Note**: Please reboot the system for changes on this setting to take effect. Please refer to Intel's website for detailed information.

DCU (Data Cache Unit) Streamer Prefetcher (Available when supported by the CPU)

If set to Enable, the DCU Streamer Prefetcher will prefetch data streams from the cache memory to the DCU (Data Cache Unit) to speed up data accessing and processing to enhance CPU performance. The options are Disable and **Enable**.

DCU IP Prefetcher

If set to Enable, the IP prefetcher in the DCU (Data Cache Unit) will prefetch IP addresses to improve network connectivity and system performance. The options are **Enable** and Disable.

DCU Mode

Use this feature to set the data-prefecting mode for the DCU (Data Cache Unit). The options are **32KB 8Way Without ECC** and 16KB 4Way With ECC.

Direct Cache Access (DCA)

Select Enable to use Intel DCA (Direct Cache Access) Technology to improve the efficiency of data transferring and accessing. The options are **Auto**, Enable, and Disable.

DCA Prefetch Delay

A DCA Prefetcher is used with a TOE (TCP/IP Offload Engine) adapter to prefetch data in order to shorten execution cycles and maximize data processing efficiency. Prefetching data too frequently can saturate the cache directory and delay necessary cache access. This feature reduces or increases the frequency the system prefetches data. The options are Disable, [8], [16], [24], **[32]**, [40], [48], [56], [64], [72], [80], [88], [96], [104], [112].

X2 APIC (Advanced Programmable Interrupt Controller)

Based on Intel's Hyper-Threading architecture, each logical processor (thread) is assigned 256 APIC IDs (APIDs) in 8-bit bandwidth. When this feature is set to Enable, the APIC ID will be expanded (X2) from 8 bits to 16 bits to provide 512 APIDs to each thread to enhance CPU performance. The options are **Disable** and Enable.

AES-NI

Select Enable to use the Intel Advanced Encryption Standard (AES) New Instructions (NI) to ensure data security. The options are Enable and **Disable**.

Intel Virtualization Technology

Select Enable to use Intel Virtualization Technology support for Direct I/O VT-d support by reporting the I/O device assignments to the VMM (Virtual Machine Monitor) through the DMAR ACPI tables. This feature offers fully-protected I/O resource sharing across Intel platforms, providing greater reliability, security and availability in networking and data-sharing. The options are **Enable** and Disable.

▶ Advanced Power Management Configuration

Advanced Power Management Configuration

Power Technology

Select Energy Efficient to support power-saving mode. Select Custom to customize system power settings. Select Disabled to disable power-saving settings. The options are Disable, **Energy Efficient**, and Custom.

If the option is set to Energy Efficient or Custom, the following items will display:

Config TDP (Configuring Thermal Design Power)

Select Enable to configure TDP power settings to enhance thermal management. The options are Enable and **Disable**.

Config TDP Level (Available when Config TDP above is set to Enable)

Use this item to set TDP configuration level to enhance thermal management. The options are **Nominal**, Level 1, and Level 2.

▶ CPU P State Control (Available when Power Technology is set to Custom)

EIST (P-states)

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency to reduce power consumption and heat dissipation. The options are Disable and **Enable**.

P-state Coordination

This feature is used to change the P-state (Power-Performance State) coordination type. P-state is also known as "SpeedStep" for Intel processors. Select HW_ALL to change the P-state coordination type for hardware components only. Select SW_ALL to change the P-state coordination type for all software installed in the system. Select SW_ANY to change the P-state coordination type for a software program in the system. The options are **HW_All,** SW_ALL, and SW_ANY.

▶ CPU C State Control (Available when Power Technology is set to Custom)

Package C State limit

Use this item to set the limit on the C-State package register. The options are C0/1 state, C2 state, C6 (non-Retention) state, and **C6 (Retention) state**.

CPU C3 Report

Select Enable to allow the BIOS to report the CPU C3 State (ACPI C2) to the operating system. During the CPU C3 State, the CPU clock generator is turned off. The options are Enable and **Disable.**

CPU C6 Report (Available when Power Technology is set to Custom)

Select Enable to allow the BIOS to report the CPU C6 state (ACPI C3) to the operating system. During the CPU C6 state, power to all cache is turned off. The options are **Enable** and Disable.

Enhanced Halt State (C1E)

Select Enabled to use Enhanced Halt-State technology, which will significantly reduce the CPU's power consumption by reducing the CPU's clock cycle and voltage during a Halt-state. The options are Disable and **Enable**.

▶ CPU T State Control (Available when Power Technology is set to Custom)

ACPI (Advanced Configuration Power Interface) T-States

Select Enable to support CPU throttling by the operating system to reduce power consumption. The options are **Enable** and Disable.

▶Chipset Configuration

Warning! Please set the correct settings for the items below. A wrong configuration setting may cause the system to become malfunction.

▶North Bridge

This feature allows the user to configure the settings for the Intel North Bridge.

▶IIO Configuration

EV DFX (Device Function On-Hide) Features

When this feature is set to Enable, the EV_DFX Lock Bits that are located on a processor will always remain clear during electric tuning. The options are **Disable** and Enable.

▶IIO1 Configuration

IOU2 (II0 PCIe Port 1)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4, x8, and **Auto**.

IOU0 (II0 PCIe Port 2)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

IOU1 (II0 PCIe Port 3)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

▶IIO2 Configuration

IOU2 (II0 PCIe Port 1)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4, x8, and **Auto**.

PORT 1A Link Speed

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and **Gen 3 (Generation 3) (8 GT/s)**.

IOU0 (II0 PCIe Port 2)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

PORT 2A Link Speed

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and **Gen 3 (Generation 3) (8 GT/s)**.

PORT 2C Link Speed

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and **Gen 3 (Generation 3) (8 GT/s)**.

IOU1 (II0 PCIe Port 3)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

PORT 3A Link Speed

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and **Gen 3 (Generation 3) (8 GT/s)**.

▶IOAT (Intel® IO Acceleration) Configuration

Enable IOAT

Select Enable to enable Intel I/OAT (I/O Acceleration Technology) support, which significantly reduces CPU overhead by leveraging CPU architectural improvements and freeing the system resource for other tasks. The options are **Enable** and Disable.

No Snoop

Select Enable to support no-snoop mode for each CB device. The options are **Disable** and Enable.

Relaxed Ordering

Select Enable to enable Relaxed Ordering support which will allow certain transactions to violate the strict-ordering rules of PCI bus for a transaction to be completed prior to other transactions that have already been enqueued. The options are **Disable** and Enable.

▶ Intel VT for Directed I/O (VT-d)

Intel VT for Direct I/O (VT-d)

Intel® VT for Directed I/O (VT-d)

Select Enable to use Intel Virtualization Technology support for Direct I/O VT-d support by reporting the I/O device assignments to the VMM (Virtual Machine Monitor) through the DMAR ACPI tables. This feature offers fully-protected I/O resource sharing across Intel platforms, providing greater reliability, security and availability in networking and data-sharing. The options are **Enable** and Disable.

Interrupt Remapping

Select Enable for Interrupt Remapping support to enhance system performance. The options are **Enable** and Disable.

Coherency Support (Non-Isoch)

Select Enable for the Non-Iscoh VT-d engine to pass through DMA (Direct Memory Access) to enhance system performance. The options are **Enable** and Disable.

Coherency Support (Isoch)

Select Enable for the Iscoh VT-d engine to pass through ATS to enhance system performance. The options are Enable and **Disable**.

▶QPI (Quick Path Interconnect) Configuration

QPI Status

The following information will display:

- Number of CPU
- Number of II0
- Current QPI Link Speed
- Current QPI Link Frequency
- QPI Global MMIO Low Base/Limit
- QPI Global MMIO High Base/Limit
- QPI PCIe Configuration Base/Size

Link Speed Mode

Use this item to select the data transfer speed for QPI Link connections. The options are **Fast** and Slow.

Link Frequency Select

Use this item to select the desired frequency for QPI Link connections. The options are 6.4GB/s, 8.0GB/s, 9.6GB/s, **Auto,** and Auto Limited.

Link L0p Enable

Select Enable for Link L0p support. The options are **Enable** and Disable.

Link L1 Enable

Select Enable for Link L1 support. The options are **Enable** and Disable.

COD Enable (Available when the OS and the CPU support this feature)

Select Enable for Cluster-On-Die support to enhance system performance in cloud computing. The options are Enable, **Disable**, and Auto.

Early Snoop (Available when the OS and the CPU support this feature)

Select Enable for Early Snoop support to enhance system performance. The options are Enable, Disable, and **Auto**.

Isoc Mode

Select Enable for Isochronous support to meet QoS (Quality of Service) requirements. This feature is especially important for Virtualization Technology. The options are Enable and **Disable**.

▶Memory Configuration

Enforce POR

Select Enabled to enforce POR restrictions on DDR4 frequency and voltage programming. The options are **Enabled** and Disabled.

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1333, 1400, 1600, 1800, 1867, 2000, 2133, 2200, 2400, 2600, 2667, and Reserved (Do not select Reserved).

ECC Support

Select Enable to enable Error Checking & Correction (ECC) support for onboard memory modules. The options are **Auto**, Enable and Disable.

Data Scrambling

Select Enabled to enable data scrambling to enhance system performance and data integrity. The options are **Auto**, Disabled and Enabled.

DRAM RAPL (Running Average Power Limit) Baseline

Use this feature to set the run-time power-limit baseline for DRAM modules. The options are Disable, DRAM RAPL Mode 0, and **DRAM RAPL Mode 1**.

Set Throttling Mode

Throttling improves reliability and reduces power consumption in the processor via automatic voltage control during processor idle states. The options are Disabled and **CLTT** (Closed Loop Thermal Throttling).

Socket Interleave Below 4GB

Select Enable for the memory above the 4G Address space to be split between two sockets. The options are Enable and **Disable**.

Channel Interleaving

Use this item to set DIMM channel interleaving mood. The options are **Auto**, 1-Way Interleave, 2-Way Interleave, 3-Way Interleave, and 4-Way Interleave.

Rank Interleaving

Use this item to select a rank memory interleaving method. The options are **Auto**, 1-Way, 2-Way, 4-Way, and 8-Way.

A7 Mode

Select Enable to support the A7 (Addressing) mode to improve memory performance. The options are **Enable** and Disable.

▶DIMM Information

This item displays the status of a DIMM module as detected by the AMI BIOS.

▶Memory RAS (Reliability_Availability_Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

RAS Mode

When Disable is selected, RAS is not supported. When Mirror is selected, the motherboard maintains two identical copies of all data in memory for data backup. When Lockstep is selected, the motherboard uses two areas of memory to run the same set of operations in parallel to boost performance. The options are **Disable**, Mirror, and Lockstep Mode.

Lockstep x4 DIMMs

Select Enable to enable Lockstep support for x4 DIMM modules. The options are **Auto**, Disabled, and Enabled.

Memory Rank Sparing

Select Enable to enable memory-sparing support for memory ranks to improve memory performance. The options are **Disabled** and Enabled.

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enable, the IO hub will read and write back one cache line every 16K cycles, if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are **Enable** and Disable.

Patrol Scrub Interval

This feature allows you to decide how many hours the system should wait before the next complete patrol scrub is performed. Use the keyboard to enter a value from 0-24. The Default setting is **24**.

Demand Scrub

Demand Scrubbing is a process that allows the CPU to correct correctable memory errors found on a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, the error is corrected and sent to the requestor (the original source). Memory is updated as well. Select Enable to use Demand Scrubbing for ECC memory correction. The options are **Enable** and Disable.

Device Tagging

Select Enable to support device tagging. The options are **Disable** and Enable.

▶South Bridge

The following South Bridge information will display:

▶USB Configuration

- USB Module Version
- USB Devices

Legacy USB Support

Select Enabled to support onboard legacy USB devices. Select Auto to disable legacy support if there are no legacy USB devices present. Select Disabled to have all USB devices available for EFI applications only. The options are **Enabled,** Disabled and Auto.

XHCI Hand-Off

This is a work-around solution for operating systems that do not support XHCI (Extensible Host Controller Interface) hand-off. The XHCI ownership change should be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

EHCI Hand-Off

This item is for operating systems that do not support Enhanced Host Controller Interface (EHCI) hand-off. When this item is enabled, EHCI ownership change will be claimed by the EHCI driver. The settings are Enabled and **Disabled**.

USB Mass Storage Driver Support

Select Enabled to support USB mass storage devices. The options are Disabled and **Enabled**.

Port 60/64 Emulation

Select Enabled to support I/O port 60h/64h emulation, which will provide complete legacy USB keyboard support for the operating systems that do not support legacy USB devices. The options are Disabled and **Enabled**.

USB 3.0 Support

Select Enabled for USB 3.0 support. The options are Smart Auto, **Auto**, Enabled, Disabled, and Manual.

EHCI1

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 3.0 connector #1 (-at least one USB 3.0 connector should be enabled for EHCI support.) The options are Disabled and **Enabled**.

EHCI2

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 3.0 connector #2 (-at least one USB 2.0 connector should be enabled for EHCI support.) The options are Disabled and **Enabled**.

XHCI Pre-Boot Drive

Select Enabled to enable XHCI (Extensible Host Controller Interface) support on a pre-boot drive specified by the user. The options are Enabled and **Disabled**.

XHCI Idle L1

Select Enabled for XHCI (Extensible Host Controller Interface) Idle Level 1 support on a USB 3.0 connector specified by the user. The options are **Enabled** and Disabled.

PCH DMI ASPM

Select Enabled to enable ASPM (Active State Power Management) support for a PCH DMI drive. The options are **Disabled** and Enabled.

▸SATA Configuration

When this submenu is selected, AMI BIOS automatically detects the presence of the SATA devices that are supported by the Intel PCH chip and displays the following items:

SATA Controller

This item enables or disables the onboard SATA controller supported by the Intel PCH chip. The options are **Enabled** and Disabled.

Configure SATA as

Select IDE to configure a SATA drive specified by the user as an IDE drive. Select AHCI to configure a SATA drive specified by the user as an AHCI drive. Select RAID to configure a SATA drive specified by the user as a RAID drive. The options are IDE, **AHCI**, and RAID.

**If the item above "Configure SATA as" is set to AHCI, the following items will display:*

Support Aggressive Link Power Management

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Enabled** and Disabled.

SATA Port 0~ Port 5

This item displays the information detected on the installed SATA drive on the particular SATA port.

- Model number of drive and capacity

- Software Preserve Support

Port 0~ Port 5

Select Enabled to enable a SATA port specified by the user. The options are Disabled and Enabled.

Port 0 ~ Port 5 Hot Plug

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port without shutting down the system. The options are **Enabled** and Disabled.

Port 0 ~ Port 5 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to initialize the device. The options are Enabled and **Disabled**.

Port 0 ~ Port 5 SATA Device Type

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

**If the item above "Configure SATA as" is set to IDE, the following items will display:*

Serial ATA Port 0~ Port 5

This item indicates that a SATA port specified by the user is installed (present) or not.

Port 0 ~ Port 5 SATA Device Type (Available when a SATA port is detected)

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

**If the item above "Configure SATA as" is set to RAID, the following items will display:*

Support Aggressive Link Power Management

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Enabled** and Disabled.

SATA RAID Option ROM/UEFI Driver

Select EFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are Disabled, **EFI**, and Legacy.

Serial ATA Port 0~ Port 5

This item displays the information detected on the installed SATA drives on the particular SATA port.

- Model number of drive and capacity

- Software Preserve Support

Port 0~ Port 5

Select Enabled to enable a SATA port specified by the user. The options are Disabled and **Enabled**.

Port 0 ~ Port 5 Hot Plug

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port without shutting down the system. The options are Enabled and **Disabled**.

Port 0 ~ Port 5 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are Enabled and **Disabled**.

Port 0 ~ Port 5 SATA Device Type

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

▶sSATA Configuration

When this submenu is selected, AMI BIOS automatically detects the presence of the SATA devices that are supported by the PCH-sSATA controller and displays the following items:

sSATA Controller

This item enables or disables the onboard SATA controller supported by the Intel PCH-sSATA controller. The options are **Enabled** and Disabled.

Configure sSATA as

Select IDE to configure an sSATA drive specified by the user as an IDE drive. Select AHCI to configure an sSATA drive specified by the user as an AHCI drive. Select RAID to configure an sSATA drive specified by the user as a RAID drive. The options are IDE, **AHCI**, and RAID.

**If the item above "Configure sSATA as" is set to AHCI, the following items will display:*

Support Aggressive Link Power Management

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Enabled** and Disabled.

sSATA Port 0~ Port 3

This item displays the information detected on the installed on the sSATA port. specified by the user.

- Model number of drive and capacity

- Software Preserve Support

sSATA Port 0~ Port 3

Select Enabled to enable an sSATA port specified by the user. The options are Disabled and Enabled.

sSATA Port 0 ~ Port 3 Hot Plug

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a sSATA disk drive installed on this port without shutting down the system. The options are **Enabled** and Disabled.

sSATA Port 0 ~ Port 3 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are Enabled and **Disabled**.

Port 0 ~ Port 3 sSATA Device Type

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

**If the item above "Configure sSATA as" is set to IDE, the following items will display:*

sSATA Port 0~ Port 3

This item indicates that an sSATA port specified by the user is installed (present) or not.

Port 0 ~ Port 3 sSATA Device Type (Available when a SATA port is detected)

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

**If the item above "Configure sSATA as" is set to RAID, the following items will display:*

Support Aggressive Link Power Management

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Enabled** and Disabled.

sSATA RAID Option ROM/UEFI Driver

Select EFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are Disabled, **EFI**, and Legacy.

sSATA Port 0~ Port 3

This item displays the information detected on the installed sSATA drives on the particular sSATA port.

- Model number of drive and capacity
- Software Preserve Support

sSATA Port 0~ Port 3

Select Enabled to enable an sSATA port specified by the user. The options are Disabled and Enabled.

sSATA Port 0 ~ Port 3 Hot Plug

This feature designates this port for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace an sSATA drive without shutting down the system. The options are Enabled and **Disabled**.

sSATA Port 0 ~ Port 3 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are Enabled and **Disabled**.

Port 0 ~ Port 3 sSATA Device Type

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

▶Server ME (Management Engine) Configuration

This feature displays the following system ME configuration settings.

- General ME Configuration
- Operational Firmware Version
- Recovery Firmware Version
- ME Firmware Features
- ME Firmware Status #1

- ME Firmware Status #2
    - Current State
    - Error Code

▶PCIe/PCI/PnP Configuration

The following PCI information will be displayed:

- PCI Bus Driver Version
- PCI Device Common Settings

PCI Latency Timer

Use this item to configure the PCI latency timer for a device installed on a PCI bus. Select 32 to set the PCI latency timer to 32 PCI clock cycles. The options are **32**, 64, 96, 128, 160, 192, 224, and 248 (PCI Bus Clocks).

VGA Palette Snoop

Select Enabled to support VGA palette register snooping which will allow a PCI card that does not contain its own VGA color palette to examine a video card palette and mimic it for proper color display. The options are **Disabled** and Enabled.

PCI AER (Advanced Error-Reporting) Support

Select Enabled to support Advanced Error-Reporting for onboard PCI devices. The options are **Disabled** and Enabled.

Above 4G Decoding (Available if the system supports 64-bit PCI decoding)

Select Enabled to decode a PCI device that supports 64-bit in the space above 4G Address. The options are Enabled and **Disabled**.

SR-IOV (Available if the system supports Single-Root Virtualization)

Select Enabled for Single-Root IO Virtualization support. The options are Enabled and **Disabled.**

Maximum Payload

Select Auto for the system BIOS to automatically set the maximum payload value for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes, and 256 Bytes.

Maximum Read Request

Select Auto for the system BIOS to automatically set the maximum size for a read request for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

ASPM Support

Use this item to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are **Disabled**, and Auto.

Warning: Enabling ASPM support may cause some PCI-E devices to fail!

MMIOHBase

Use this item to select the I/O base memory size according to memory-address mapping for the PCH chip. The base memory size must be between 4032G to 4078G. The options are **56T**, 48T, 24T, 512G, and 256G.

MMIO High Size

Use this item to select the high I/O memory size according to memory-address mapping for the PCH chip. The options are **256G**, 128G, 512G, and 1024G.

PCI/PCIX/PCIe Slot 1 OPROM/PCI/PCIX/PCIe Slot 2 OPROM/PCI/PCIX/PCIe Slot 3 OPROM/PCI/PCIX/PCIe Slot 4 OPROM/

Select Enabled to enable Option ROM support to boot the computer using a device installed on the slot specified by the user. The options are Disabled, **Legacy** and EFI.

Onboard LAN Option ROM Type

Select Enabled to enable Option ROM support to boot the computer using a device installed on the slot specified by the user. The options are **Legacy** and EFI.

Onboard LAN1 Option ROM/Onboard LAN2 Option ROM/Onboard Video Option ROM

Use this option to select the type of device installed in LAN Port1, LAN Port2 or the onboard video device used for system boot. The default setting for LAN1 Option ROM is **PXE**, for LAN2 Option ROM is **Disabled** and for Onboard Video Option ROM is **Legacy**.

VGA Priority

Use this item to select the graphics device to be used as the primary video display for system boot. The options are **Onboard** and Offboard.

Network Stack

Select Enabled to enable PXE (Preboot Execution Environment) or UEFI (Unified Extensible Firmware Interface) for network stack support. The options are Enabled and **Disabled**.

▶Super IO Configuration

Super IO Chip AST2400

▶Serial Port 1 Configuration/Serial Port 2 Configuration

Serial Port 1/Serial Port 2

Select Enabled to enable the onboard serial port specified by the user. The options are **Enabled** and Disabled.

Device Settings

This item displays the base I/O port address and the Interrupt Request address of a serial port specified by the user.

Change Port 1 Settings/Change Port 2 Settings

This feature specifies the base I/O port address and the Interrupt Request address of Serial Port 1 or Serial Port 2. Select **Auto** for the BIOS to automatically assign the base I/O and IRQ address to a serial port specified.

The options for Serial Port 1 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

The options for Serial Port 2 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

Serial Port 2 Attribute

Select SOL to use COM Port 2 as a Serial_Over_LAN (SOL) port for console redirection. The options are COM and **SOL**.

▶Serial Port Console Redirection

COM 1

COM 1 Console Redirection

Select Enabled to enable COM Port 1 Console Redirection, which will allow a client machine to be connected to a host machine at a remote site for networking. The options are **Disabled** and Enabled.

**If the item above set to Enabled, the following items will become available for configuration:*

▶COM1 Console Redirection Settings

Terminal Type

This feature allows the user to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

Use this item to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

Flow Control

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled**.**

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Legacy OS Redirection Resolution

Use this item to select the number of rows and columns used in Console Redirection for legacy OS support. The options are 80x24 and **80x25**.

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS Post

Use this feature to enable or disable legacy Console Redirection after BIOS POST. When the option-Bootloader is selected, legacy Console Redirection is disabled before booting the OS. When the option- Always Enable is selected, legacy Console Redirection remains enabled upon OS bootup. The options are **Always Enable** and Bootloader.

SOL/COM2

SOL/COM2 Console Redirection

Select Enabled to use the SOL port for Console Redirection. The options are **Enabled** and Disabled.

**If the item above set to Enabled, the following items will become available for user's configuration:*

▶SOL/COM2 Console Redirection Settings

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start data-sending when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled**.**

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Legacy OS Redirection Resolution

Use this feature to select the number of rows and columns used in Console Redirection for legacy OS support. The options are 80x24 and **80x25**.

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS Post

Use this feature to enable or disable legacy Console Redirection after BIOS POST (Power-On Self-Test). When this feature is set to Bootloader, legacy Console Redirection is disabled before booting the OS. When this feature is set to Always Enable, legacy Console Redirection remains enabled upon OS boot. The options are **Always Enable** and Bootloader.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

The submenu allows the user to configure Console Redirection settings to support Out-of-Band Serial Port management.

EMS Console Redirection

Select Enabled to use a COM port selected by the user for EMS Console Redirection. The options are Enabled and **Disabled.**

*If the item above set to Enabled, the following items will become available for user's configuration:

▶EMS Console Redirection Settings (Available when EMS Console Redirection is enabled)

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

Out-of-Band Management Port

The feature selects a serial port in a client server to be used by the Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1 (Console Redirection)** and COM2/SOL (Console Redirection).

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, VT100+, and **VT-UTF8**.

Bits Per Second

This item sets the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in both host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

Flow Control

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop data-sending when the receiving buffer is full. Send a "Start" signal to start data-sending when the receiving buffer is empty. The options are **None,** Hardware RTS/CTS, and Software Xon/Xoff.

The setting for each these features is displayed:

Data Bits, Parity, Stop Bits

▶Trusted Computing (Available when a TPM device is installed and detected by the BIOS)

Configuration

Security Device Support

If this feature and the TPM jumper on the motherboard are both set to Enabled, onboard security devices will be enabled for TPM (Trusted Platform Module) support to enhance data integrity and network security. Please reboot the system for a change on this setting to take effect. The options are Enabled and **Disabled**.

TPM State

Select Enabled to use TPM (Trusted Platform Module) settings to enhance system data security. Please reboot your system for any change on the TPM state to take effect. The options are Disabled and **Enabled**.

Pending Operation

Use this item to schedule a TPM-related operation to be performed by a security device for system data integrity. Your system will reboot to carry out a pending TPM operation. The options are **0**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

> **Note**: Your system will reboot to carry out a pending TPM operation.

Current Status Information

This item displays the status of the TPM support on this motherboard.

▸ACPI Settings

WHEA Support

Select Enabled to support the Windows Hardware Error Architecture (WHEA) platform and provide a common infrastructure for the system to handle hardware errors within the Windows OS environment to reduce system crashes and to enhance system recovery and health monitoring. The options are Enabled and **Disabled**.

High Precision Timer

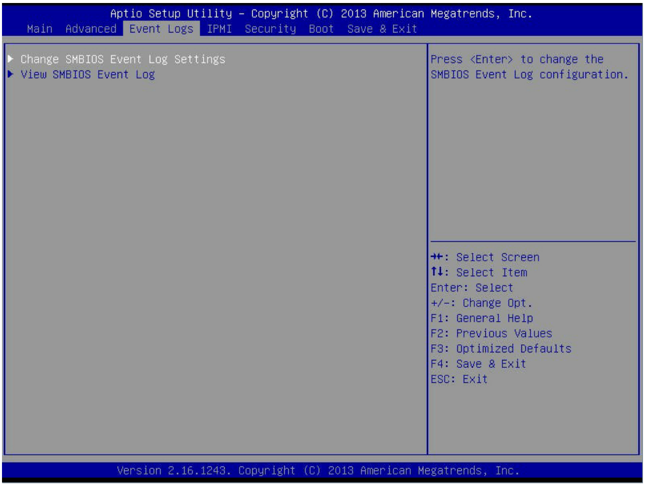
Select Enabled to activate the High Precision Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

NUMA (Available when the OS supports this feature)

Select Enabled to enable Non-Uniform Memory Access support to enhance system performance. The options are **Enabled** and Disabled.

7-4 Event Logs

Use this feature to configure Event Log settings.



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▶ Change SMBIOS Event Log Settings

▶ View SMBIOS Event Log

Press <Enter> to change the SMBIOS Event Log configuration.

→←: Select Screen

↑↓: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

F3: Optimized Defaults

F4: Save & Exit

ESC: Exit

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▶Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

Enabling/Disabling Options

SMBIOS Event Log

Select Enabled to enable SMBIOS (System Management BIOS) Event Logging during system boot. The options are **Enabled** and Disabled.

Runtime Error Logging Support

Select Enable to support Runtime Error Logging. The options are Enable and **Disable**. If this item is set to Enable, the following item will be available for configuration:

Memory Corrected Error Enabling (Available when the item above-Runtime Error Logging Support is set to Enable)

Select Enable for the BIOS to correct a memory error if it is correctable. The options are Enable and **Disable**.

PCI-Ex (PCI-Express) Error Enable

Select Yes for the BIOS to correct errors occurred in the PCI-E slots. The options are Yes and **No**.

Memory Correctable Error Threshold

Use this item to enter the threshold value for correctable memory errors. The default setting is **10**.

Erasing Settings

Erase Event Log

Select Yes to erase all error events in the SMBIOS (System Management BIOS) log before an event logging is initialized at bootup. The options are **No** and Yes.

When Log is Full

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings

Log System Boot Event

Select Enabled to log system boot events. The options are **Disabled** and Enabled.

MECI (Multiple Event Count Increment)

Enter the increment value for the multiple event counter. Enter a number between 1 to 255. The default setting is **1**.

METW (Multiple Event Count Time Window)

This item is used to determine how long (in minutes) the multiple event counter should wait before generating a new event log. Enter a number between 0 to 99. The default setting is **60**.

Note: Please reboot the system for the changes to take effect.

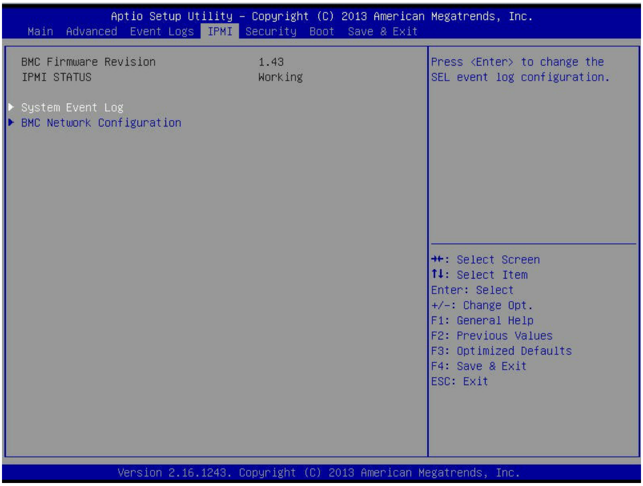
▶View SMBIOS Event Log

This item allows the user to view the event in the SMBIOS event log. Select this item and press <Enter> to view the status of an event in the log. The following categories are displayed:

Date/Time/Error Code/Severity

7-5 IPMI

Use this feature to configure Intelligent Platform Management Interface (IPMI) settings.



```
          Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

  BMC Firmware Revision               1.43        Press <Enter> to change the
  IPMI STATUS                         Working     SEL event log configuration.

▶ System Event Log
▶ BMC Network Configuration

                                                  →←: Select Screen
                                                  ↑↓: Select Item
                                                  Enter: Select
                                                  +/-: Change Opt.
                                                  F1: General Help
                                                  F2: Previous Values
                                                  F3: Optimized Defaults
                                                  F4: Save & Exit
                                                  ESC: Exit

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```

BMC (BaseBoard Management Controller) Firmware Revision

This item indicates the BMC firmware revision used in your system.

IPMI Status

This item indicates the status of the IPMI firmware installed in your system.

▶System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled to enable all system event logging support at bootup. The options are **Enabled** and Disabled.

Erasing Settings

Erase SEL

Select Yes, On next reset to erase all system event logs upon next system reboot. Select Yes, On every reset to erase all system event logs upon each system reboot. Select No to keep all system event logs after each system reboot. The options are **No,** Yes, On next reset, and Yes, On every reset.

When SEL is Full

This feature allows the user to determine what the AMI BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

> **Note**: After making changes on a setting, be sure to reboot the system for the changes to take effect.

▶BMC Network Configuration

The following items will be displayed:

- IPMI LAN Selection
- IPMI Network Link Status

Update IPMI LAN Configuration

Select Yes for the system BIOS to automatically reset the following IPMI settings at next system boot. The options are Yes and **No**.

Configuration Address Source (Available when the item above - Update IPMI LAN Configuration is set to Yes)

Use this item to select the IP address source for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, AMI BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server attached to the network and request the next available IP address for this computer. The options are **DHCP** and Static.

Station IP Address

This item displays the Station IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

Subnet Mask

This item displays the sub-network that this computer belongs to. The value of each three-digit number is separated by dots and it should not exceed 255.

Station MAC Address

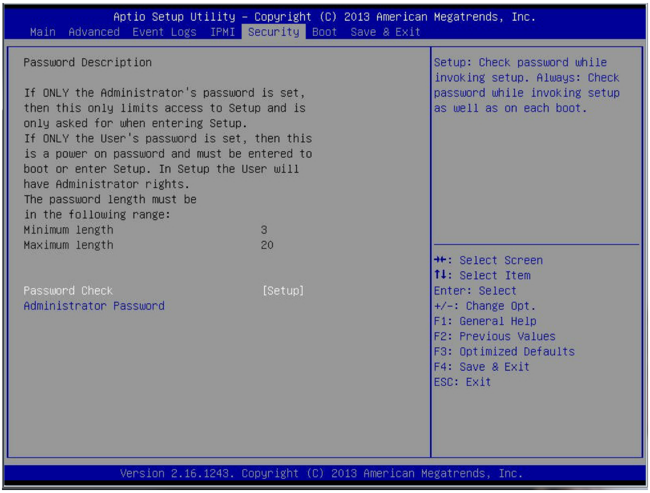
This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

Gateway IP Address

This item displays the Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

7-6 Security Settings

This menu allows the user to configure the following security settings for the system.



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Main Advanced Event Logs IPMI Security Boot Save & Exit

```
Password Description                                    Setup: Check password while
                                                        invoking setup. Always: Check
If ONLY the Administrator's password is set,            password while invoking setup
then this only limits access to Setup and is            as well as on each boot.
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup. In Setup the User will
have Administrator rights.
The password length must be
in the following range:
Minimum length                          3
Maximum length                          20
                                                        →←: Select Screen
                                                        ↑↓: Select Item
Password Check                          [Setup]         Enter: Select
Administrator Password                                  +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit
```

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Password Check

Select Setup for the system to prompt for a password upon entering the BIOS setup utility. Select Always for the system to prompt for a password at bootup and upon entering the BIOS Setup utility. The options are **Setup** and Always.

Administrator Password

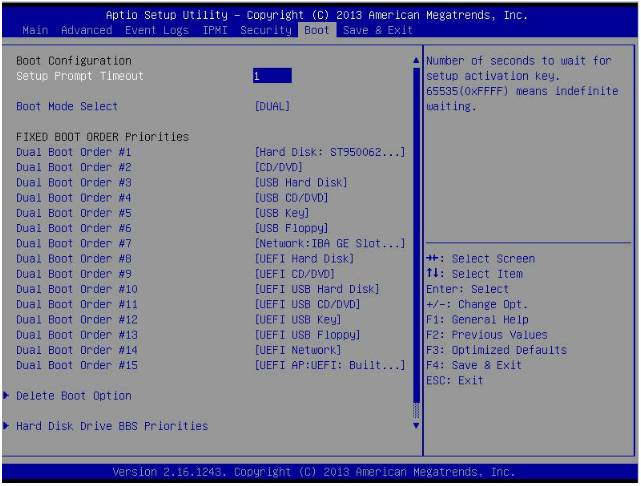
Use this feature to set the administrator password which is required before entering the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

User Password

Use this feature to set the user password which is required to enter the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

7-7 Boot Settings

Use this feature to configure Boot Settings:


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced Event Logs IPMI Security Boot Save & Exit
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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```
Boot Configuration
Setup Prompt Timeout                 1

Boot Mode Select                     [DUAL]

FIXED BOOT ORDER Priorities
Dual Boot Order #1                   [Hard Disk: ST950062...]
Dual Boot Order #2                   [CD/DVD]
Dual Boot Order #3                   [USB Hard Disk]
Dual Boot Order #4                   [USB CD/DVD]
Dual Boot Order #5                   [USB Key]
Dual Boot Order #6                   [USB Floppy]
Dual Boot Order #7                   [Network:IBA GE Slot...]
Dual Boot Order #8                   [UEFI Hard Disk]
Dual Boot Order #9                   [UEFI CD/DVD]
Dual Boot Order #10                  [UEFI USB Hard Disk]
Dual Boot Order #11                  [UEFI USB CD/DVD]
Dual Boot Order #12                  [UEFI USB Key]
Dual Boot Order #13                  [UEFI USB Floppy]
Dual Boot Order #14                  [UEFI Network]
Dual Boot Order #15                  [UEFI AP:UEFI: Built...]

▶ Delete Boot Option

▶ Hard Disk Drive BBS Priorities
```

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Boot Configuration

Setup Prompt Timeout

Use this item to indicate how many seconds the system shall wait for the BIOS setup activation key to respond before the system starts to boot. The default setting is **1**.

Boot Mode Select

Use this item to select the type of device to be used for system boot. The options are Legacy, UEFI, and **Dual.**

Fixed Boot Order Priorities

This option prioritizes the order of bootable devices from which the system will boot. Press <Enter> on each entry from top to bottom to select devices.

- Dual Boot Order #1
- Dual Boot Order #2
- Dual Boot Order #3
- Dual Boot Order #4
- Dual Boot Order #5
- Dual Boot Order #6

- Dual Boot Order #7
- Dual Boot Order #8
- Dual Boot Order #9
- Dual Boot Order #10
- Dual Boot Order #11
- Dual Boot Order #12
- Dual Boot Order #13
- Dual Boot Order #14
- Dual Boot Order #15

▶Delete Boot Option

Use this item to select a boot device to delete from the boot priority list.

Delete Boot Option

Select the target boot device to delete.

▶Hard Disk Drive BBS Priorities

- Legacy Boot Order #1

▶Network Drive BBS Priorities

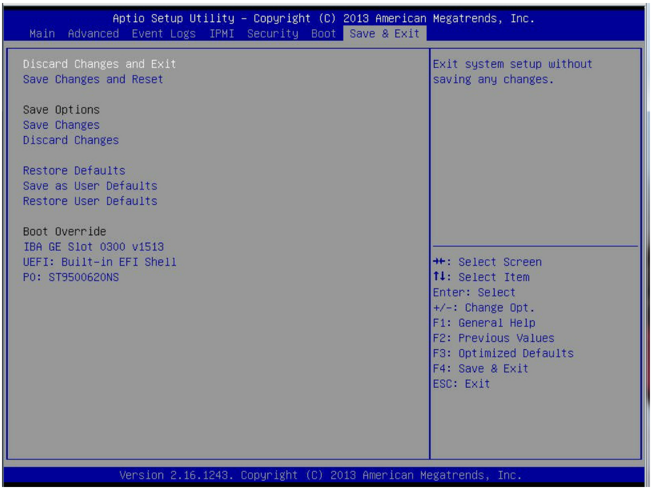
- Legacy Boot Order #1

▶UEFI Application Boot Priorities

- UEFI Boot Order #1

7-8 Save & Exit

Select the Save & Exit tab from the BIOS setup screen to configure the settings below.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main
Advanced
Event Logs
IPMI
Security
Boot
Save & Exit

Discard Changes and Exit
Save Changes and Reset

Save Options
Save Changes
Discard Changes

Restore Defaults
Save as User Defaults
Restore User Defaults

Boot Override
IBA GE Slot 0300 v1513
UEFI: Built-in EFI Shell
P0: ST9500620NS

Exit system setup without saving any changes.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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Discard Changes and Exit

Select this option to quit the BIOS setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Save Changes and Reset

When you have completed the system configuration changes, select this option to leave the BIOS setup utility and reboot the computer for the new system configuration parameters to take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Save Options

Save Changes

When you have completed the system configuration changes, select this option to save all changes made. This will not reset (reboot) the system.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS setup utility.

Restore Defaults

Select this item and press <Enter> to load the manufacture default settings which are designed for maximum system performance but not for maximum stability.

Save As User Defaults

Select this item and press <Enter> to save the current BIOS settings as user's default settings for future use.

Restore User Defaults

Select this item and press <Enter> to retrieve user-defined settings that were previously saved for future use.

Boot Override

This feature allows the user to override the Boot priorities sequence in the Boot menu and immediately boot the system with another device specified by the user. This is a one-time override.

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list (on the following page) correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

A-1 AMIBIOS Error Beep Codes

Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short beeps and 1 long beep	Memory error	No memory detected in the system
5 long and 2 short beeps	Display memory read/write error	Video adapter missing or with faulty memory
1 continuous beep	System overheat	System overheat

Notes

Appendix B

System Specifications

Note: Unless noted specifications apply to a complete system (all serverboards).

Processors

Two E5-2600 v3 series processors per node in Socket R LGA 2011 type sockets

Note: please refer to our website for details on supported processors.

Chipset

One PCH C612 chipset per node

BIOS

128 Mb AMI BIOS® Flash EEPROM per node

Memory Capacity

Each node has up to sixteen DIMM slots supporting up to 1024 GB of LRDIMM (Load Reduced DIMM) or 512 GB of RDIMM (Registered DIMM) DDR4-2133/1866/1600 MHz registered ECC memory

Note: refer to Section 5-6 for details on installation.

Note: check the Supermicro website (www.supermicro.com) for the latest memory support information.

SATA Drive Bays

The SuperServer 2028TP-HTR/HTTR/HTFR contains 24 hot-swap drive bays to house 24 standard SATA drives

PCI Expansion

The SuperServer 2028TP-HTR/HTTR/HTFR has one (1) PCI Express 3.0 x16 slot (Slot 1) available per node.

Serverboard

X10DRT-P/PT/PIBF serverboard (proprietary form factor)

Dimensions: (LxW) 6.8 x 16.64 in. (172.72 x 422.66 mm)

Chassis

SC217HQ+-R2K02B (2U rackmount)

Dimensions: (WxHxD) 17.25 x 3.47 x 28.5 in. (438 x 88 x 724 mm)

Weight

Gross (Bare Bone): 88 lbs. (40 kg.)

System Cooling

The system has four 8-cm PWM system cooling fans

System Input Requirements

AC Input Voltage: 100-240V AC auto-rangeRated Input Current: 16-12A (110-140V), 12.5-9.5A (180-240V)
Rated Input Frequency: 50 to 60 Hz
Efficiency: 80+ (Platinum Level)

Power Supply

Rated Output Power: 2000W (Part# PWS-2K02P-1R) (redundant, hot-plug)
Rated Output Voltages: +12V (165A), +5Vsb (4A)

Operating Environment

Operating Temperature: 0º to 35º C (32º to 95º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 20% to 95% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate” for further details.

Notes

(continued from front)

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.